TO: BOARD OF DIRECTORS

FROM: DON SPAGNOLO
GENERAL MANAGER

DATE: JULY 21, 2010

AGENDA ITEM
E-1

JULY 28, 2010

CALIFORNIA SPECIAL DISTRICT ASSOCIATION 2010 BOARD OF DIRECTORS ELECTION

ITEM

Consideration of California Special District Association's 2010 Board of Directors election for Region 4, seat B. [SELECT CANDIDATE AND SUBMIT BALLOT]

BACKGROUND

The District is a member of the California Special Districts Association (CSDA). CSDA was formed in 1969 to ensure the continued existence of local, independent special districts. CSDA provides representation at the State Capitol and boasts a membership of nearly 700 special districts throughout California.

As a member of CSDA, the District is entitled to participate in the election of Directors to serve on the Associations governing Board of Directors. CSDA annually conducts an election for one of the three Directors from each of their six Regions (18 total Directors) for a three year term. The District is located in CSDA Region 4 in which seat B is currently filled by Tim Unruh of the Kern County Cemetery District. This year there are four candidates for seat B.

A copy of the instruction sheet with ballot information, the ballot and the statements from each candidate are attached for your review and consideration.

Your Honorable Board may vote for only one of the four candidates whose term will end in 2013.

FISCAL IMPACT

Submission of the application involves minor staff time and postage.

RECOMMENDATION

Staff recommends the Board select one candidate from the ballot to fill seat B in Region 4 and authorize the General Manager to submit the Board's vote to CSDA.

ATTACHMENTS

- Instruction Sheet
- Copy of Ballot
- Candidate's Statement

CALIFORNIA SPECIAL DISTRICTS ASSOCIATION

2010 BOARD ELECTIONS

MAIL BALLOT INFORMATION

Dear Member:

A mail ballot has been enclosed for your district's use in voting to elect a representative to the CSDA Board of Directors in Region 4, Seat B. Each of CSDA's six (6) regional divisions has three seats on the Board. Each of the candidates is either a board member or management-level employee of a member district located in your geographic region. Each Regular Member (district) in good standing shall be entitled to vote for one (1) director to represent its region.

We have enclosed the candidate statements for each candidate who submitted one. Please vote for **only one** candidate to represent your region in Seat B and be sure to sign, date and fill in your member district information (*in some regions, there may only be one candidate*). If any part of the ballot is not complete, the ballot will not be valid and will not be counted.

Please utilize the enclosed return envelope to return the completed ballot. Ballots must be received at the CSDA office at 1112 I Street, Suite 200, Sacramento, CA 95814 by **5:00pm on Friday, August 6, 2010.**

If you do not use the enclosed envelope, please mail in your ballot to:

California Special Districts Association
Attn: 2010 Board Elections
1112 I Street, Suite 200
Sacramento, CA 95814

Please contact Diana Zavala toll-free at 877.924.CSDA or dianaz@csda.net with any questions.

CSDA Regions

Board of Directors by Region

Region 1
Mark Bryant, *Garberville Sanitary District*
Phil Schoefer, *Western Shasta RCD*
Alan Schoenstein, *McCloud CSD*

Region 2
Noelle Mattock, *El Dorado Hills CSD*
Ginger Root, *Tuxedo Country Club FPD*
Pete Kampa, *Tuolumne Utilities District*

Region 3
Stanley Caldwell, *Mt. View Sanitary District*
James Kohnen, *Alameda County Mosquito AD*
Sherry Sterrett, *Pleasant Hill RPD*

Region 4
Adrienne (Ann) Mathews, *Kern County Water Agency*
Tim Unruh, *Kern County Cemetery District No. 1*
Vacant

Region 5
Jim Acosta, *Saticoy Sanitary District*
Jack Curtis, *Ojai Valley Sanitary District*
John Fox, *Goleta Sanitary District*

Region 6
Dewey Ausmus, *North County Cemetery District*
Jo MacKenzie, *Vista Irrigation District*
Arlene Schafer, *Costa Mesa Sanitary District*

OFFICIAL BALLOT

CSDA BOARD OF DIRECTORS ELECTION 2010

All Fields Must Be Completed for ballot to be counted.

(Please vote for only one.)

REGION FOUR

●

Seat B - term ends 2013

- ☐ **William Adam Cox**
  Merced County Mosquito Abatement District
- ☐ **Byron Glennan**
  Rosamond Community Services District
- ☐ **Rauden (Rod) Coburn, III**
  Fresno Mosquito & Vector Control District
- ☐ **Timothy P. Ruiz**
  East Niles Community Services District

Signature: _____ Date: _____

Member District: _____

Must be received by 5pm, August 6, 2010. CSDA, 1112 I Street, Suite 200, Sacramento, CA 95814

Adam Cox for CSDA Board of Directors, Region 4

Hello fellow CSDA members! I've been a trustee for the Merced County Mosquito Abatement District for nearly three years. During that time I've come to understand the special needs that special districts face. I've worked with my fellow trustees and district manager on a number of topics and problem areas - from local issues involving our respective city councils and board of supervisors, to legislative issues in Sacramento, to policy decisions in Washington, D.C.

I have a deep desire – as well as the drive and determination – to ensure that special districts across this State are able to serve their constituents and the taxpayers to the best of their ability; to empower special districts to meet the needs of their communities without needless delays or surprise expenses imposed by a cash-hungry Sacramento; and I'm proposing to do this working collaboratively with the CSDA's board of directors, as well as the member districts.

As the youngest MAD trustee in California, as well as the youngest school board member in Merced County, I understand the needs and expectations of a changing society. I also humbly look forward to reconciling those needs with both the realities and possibilities of what our State has to offer. Thank you, and I look forward to your support of my candidacy for the directorship of Region 4's Seat B.

Rauden [Rod] H. Coburn, III

Candidate Statement

Please allow me a self-introduction. I am Rod Coburn, a Trustee of the Fresno Mosquito and Vector Control District since 2006. My district has nominated me for CSDA's Board of Directors, Region 4, Seat B.

CSDA's mission of education and legislative representation of special districts, matches my vision of the needs of special districts. Clearly our collective voice is needed in the halls of Sacramento and in the corridors of our local legislative entities.

My desire to serve CSDA was piqued this year as a member of Fresno County's Grand Jury which investigated multiple entities, including a special district. Without CSDA, their needs would not be articulated, their Boards would not be prepared for 2010 leadership, and their small voice would be drowned by the cacophony of larger entities. CSDA is a source of their continuing education, and aggregated together, presents a persuasive legislative voice.

Although a relative newcomer to special districts, my leadership training began at Fresno State, proceeded to UCSF, School of Dentistry and to the U.S. Army. A full time clinical dental practice [since retired], coupled with a part time dental benefits consulting business, allowed me to serve Fresno-Madera Dental Society as President, my state association on committees, and the American Association of Dental Consultants as a Board member. I also served as President of Fig Garden Rotary Club and the Central Valley YMCA. I currently serve on the aforementioned grand jury, and as a CASA volunteer, assigned two children by the Juvenile Court.

Because of the variety of service arenas, I bring to CSDA's Board of Directors, a breadth of experiences to enhance the organization's vision.

Thank you for considering my nomination to serve on CSDA's Board of Directors—my great honor to serve for you.

Tim Ruiz Campaign Statement for CSDA Board of Directors, Region 4

My name is Tim Ruiz and I have been the General Manager for the East Niles Community Services District for about seven years overseeing the management of a public water system and sewer system serving the unincorporated areas of east Bakersfield. My education includes a B.S. in Civil Engineering from Cal Poly San Luis Obispo. I am also a certified Water Distribution and Water Treatment operator.

I currently serve as a Director of a local chapter of CSDA - Kern County Special District Association. I have also served as President of the American Society of Civil Engineers, South San Joaquin Branch, and as a director of the Los Angeles Section of ASCE. I have also been involved with the Kern County Superintendent of Schools serving as a judge for Math Counts and involved with the Academic Decathlon for Kern County high schools. Another civic duty includes serving as a reserve firefighter in the City of Bakersfield.

Prior to my current occupation, I was an engineering consultant working in the Southern San Joaquin Valley, Owens Valley, and desert areas in eastern Kern County. This experience provided valuable insight to the needs of various special districts and an understanding of the challenges these districts encounter. I understand the issues facing special districts; particularly the concerns about having enough revenues to provide the service(s) to our constituents ranging from water and sewer service to flood control and mosquito abatement. I am a believer in local government control, and with continuing education programs for boards and management of all special districts, I am confident that special districts will be important and viable for the future.

I thank you for the opportunity to serve and work with your district and ask for your District's vote.

CANDIDATE STATEMENT FOR CSDA BOARD OF DIRECTORS, REGION 4, SEAT B

BYRON GLENNAN

I am in the first year of my second four year term elected to Rosamond Community Service District. RCSD has the responsibility for water, sewer, street lighting, parks, recreation and graffiti. We are members of the Semi-tropic Rosamond Water Bank a JPA with Semi-tropic and Western Development. We have banked water this year due to the success of our water conservation program. This was the first water banked in Antelope Valley. We are planning to supply solar programs and mining in our area with recycled water from our new water treatment facility. We have recently established a JPA with the Southern Kern Unified School District focusing on parks. A new skateboard park is our first joint venture. We are currently working on a grant with the school to build a CNG facility on our property to be used by the school district and Kern County Regional Transit. I have lived in Rosamond for 63 years. I served our country in the Navy from 1963 to 1968. Following graduation from Long Beach State I began a career in education at Rosamond High School. In addition to the classroom I coached football, basketball and track. I served as the Athletic Director, Academic Decathlon Advisor, Yearbook Advisor and English Department Chair. After 35 years of teaching I retired in 2006. I have three grown children all living in the area and seven grandchildren. I feel a responsibility to plan for the future of Rosamond. That future is dependent on a reliable water source. With our existing wells, recycled water and the water bank we are on the cutting edge in Antelope Valley. I see the great need for Special Districts and would be honored to serve CSDA in the capacity of director representing Region 4.

TO: BOARD OF DIRECTORS

FROM: DON SPAGNOLO
GENERAL MANAGER

DATE: JULY 22, 2010

AGENDA ITEM
E-2

JULY 28, 2010

QUARTERLY REVIEW OF STRATEGIC PLAN

ITEM

Consider quarterly review of the strategic plan [RECEIVE REPORT AND PROVIDE DIRECTION TO STAFF]

BACKGROUND

The Strategic Plan is a top-level planning document for an organization to set clear direction over all operational aspects of its mission. It serves as a framework for decision making over a five-year period. It is a disciplined effort to produce fundamental decisions that shape what a District plans to accomplish by selecting a rational course of action.

The Strategic Plan was approved by the Board on April 14, 2010. The Board also approved quarterly reviews to assess the progress on each of the strategic elements. This will be the first quarterly review of the plan since it was approved. The plan includes seven strategic elements. Each element has numerous strategic goals with estimated completion dates. A table of the strategic elements and goals is attached. The plan also identifies actions, activities, and planning efforts that are currently underway and which are needed for continued success in operations and management of the District, and provides for periodic reviews and updates.

Based on the estimated completion dates the District is meeting the timelines for addressing each goal. The major projects include the Waterline Intertie Project and the Southland Wastewater Treatment Facility Upgrade.

FISCAL IMPACT

There is no fiscal impact.

RECOMMENDATION

Staff recommends the Board receive the report of the quarterly review of the strategic plan and provide direction to staff.

ATTACHMENT

Table 1 – The Strategic Plan "At A Glance"

STRATEGIC ELEMENTS	STRATEGIC GOALS	Estimated Completion Date (FY)
1.0 WATER	1.1 Protect, Enhance and Assess available Water Supplies	On-going
	1.2 Secure New supplies	FY11-15
	1.3 Upgrade and maintain available storage and distribution works	FY10-15
	1.4 Consistently reduce average demand per customer	On-going
	1.5 Comply with State and Fed. regulations	On-going
2.0 WASTEWATER	2.1 Efficiently operate collection, treatment and disposal works	FY10-13
	2.2 Improve treatment works	FY12-13 On-going
	2.3 Select disposal solution for Southland	FY12-13
	2.4 Provide for Disposal of Biosolids	FY12-13
	2.5 Comply with State and Federal regulations and mandates	On-going
3.0 PARTNERSHIP/ REGULATORY RELATIONS	3.1 Strengthen ties with neighboring agencies and technical groups	On-going
	3.2 Strengthen ties with County of SLO, APCD, County Environmental Health and WRAC	On-going
	3.3 Work closely with RWQCB and State DPH	On-going
	3.4 Develop deliberate legislative agenda	On-going
	3.5 Participate in LAFCO, IWMA, CSDA, CSDA Chapter, AWWA and CWEF	On-going
4.0 PERSONNEL/ ORGANIZATION	4.1 Retain and attract new employees	On-going
	4.2 Provide appropriate training and education for employees	On-going
	4.3 Continue commitment to a safe workplace environment	On-going
	4.4 Develop and maintain efficient disaster response capability	On-going
	4.5 Integrate operational technology	FY11-12

5.0 ADMINISTRATIVE MANAGEMENT	*5.1 Maintain clear and functional policies and procedures*	*On-going*
	5.2 Complete conversion to electronic records	*FY 11-12*
	5.3 Provide excellent customer service	*On-going*
6.0 FINANCES	*6.1 Operate all enterprise funds to be financially sound*	*On-going*
	6.2 Achieve targeted operating and non-operating reserves	*On-going*
	6.3 Ensure that decisions consider short and long term fiscal impacts	*On-going*
	6.4 Minimize commitment of discretionary resource long-term projects	*Ongoing*
	6.5 Protect reserves with sound investment policy and investments	*On-going*
	6.6 Review Other Post-Employment Benefits (OPEB)	*FY 11-12*
7.0 OTHER SERVICES	*7.A.1 Promote recycling*	*On-going*
	7.A.2 Provide additional solid waste services	*On-going*
	7.A.3 Communicate with customers	*On-going*
	7.B.1 Monitor maintenance of facilities	*On-going*
	7.B.2 Communicate with customers	*On-going*
	7.C.1 Monitor maintenance of facilities	*On-going*
	7.C.2 Communicate with customers	*On-going*
	7.D.1 Develop Miller Park	*FY13-14*
	7.D.2 Communicate with constituents	*On-going*
	7.D.3 Plan for parks and open space	*On-going*
	7.E.1 Monitor landscape maintenance	*On-going*
	7.E.2 Communicate with residents	*On-going*

TO: BOARD OF DIRECTORS

FROM: DON SPAGNOLO
GENERAL MANAGER

DATE: JULY 20, 2010

AGENDA ITEM
E-3

JULY 28, 2010

VARIANCE AT 146 N. THOMPSON ROAD

ITEM

Consider 146 N. Thompson Partnership Variance Application to Waive Requirement for an Irrigation Meter [PROVIDE DIRECTION TO STAFF].

BACKGROUND

Attached is a request from 146 N. Thompson Partnership (Rosie's Restaurant) for your Honorable Board to waive the District's requirement for an irrigation meter, pursuant to NCSD Code Section 1.04.030.

Your Honorable Board approved the issuance of an Intent-To-Serve letter for this project in December 2008 for an initial term of two years. The project involves the conversion of a single family residence to a small restaurant on a 6500 square foot lot at 146 N. Thompson Avenue.

Section 3.04.030 of the District Code provides that except for single-family residences, a separate service connection with backflow protection shall be provided to each parcel of property for landscape irrigation and a separate landscape meter connection fee shall be paid.

As indicated in the applicant's letter, due to County requirements, the majority of the lot that is not covered by the building will be used for parking. The applicant is proposing to use drought tolerant plant materials and has provided an estimate of the total irrigation demand for the site in the range of 20 to 40 gallons per week total during the spring and summer.

A draft resolution is attached should your Honorable Board wish to grant this application. If your Honorable Board denies the application, the applicant will need to install an irrigation meter and pay the corresponding fees.

FISCAL IMPACT

Should your Honorable Board approve the variance application, the District will not collect the current capacity charge for a 1 inch irrigation meter of $17,352 at this time. The District would collect the fee in the future if the irrigation meter is activated.

RECOMMENDATION

Staff recommends that your Honorable Board hear from the applicant and then the public. Following closure of public input, staff requests that you're Honorable Board either adopt the attached resolution approving the variance application or deny the application, by motion.

ATTACHMENTS

- May 18, 2010 Application Letter
- Draft Resolution 2010-XXXX 146 N Thompson Variance

146 N. Thompson Partnership
1220 Upper Los Berros
Nipomo, California 93444

Peter Sevcik
District Engineer
Nipomo Community Services District
148 S. Wilson Street
Nipomo, California 93444

Re: 146. N. Thompson
Nipomo, California
APN No. 090-385-016

Dear Mr. Sevcik:

Please accept this letter as the owner of the project's request for a variance to the NCSD's requirement to have an irrigation meter on the above project.

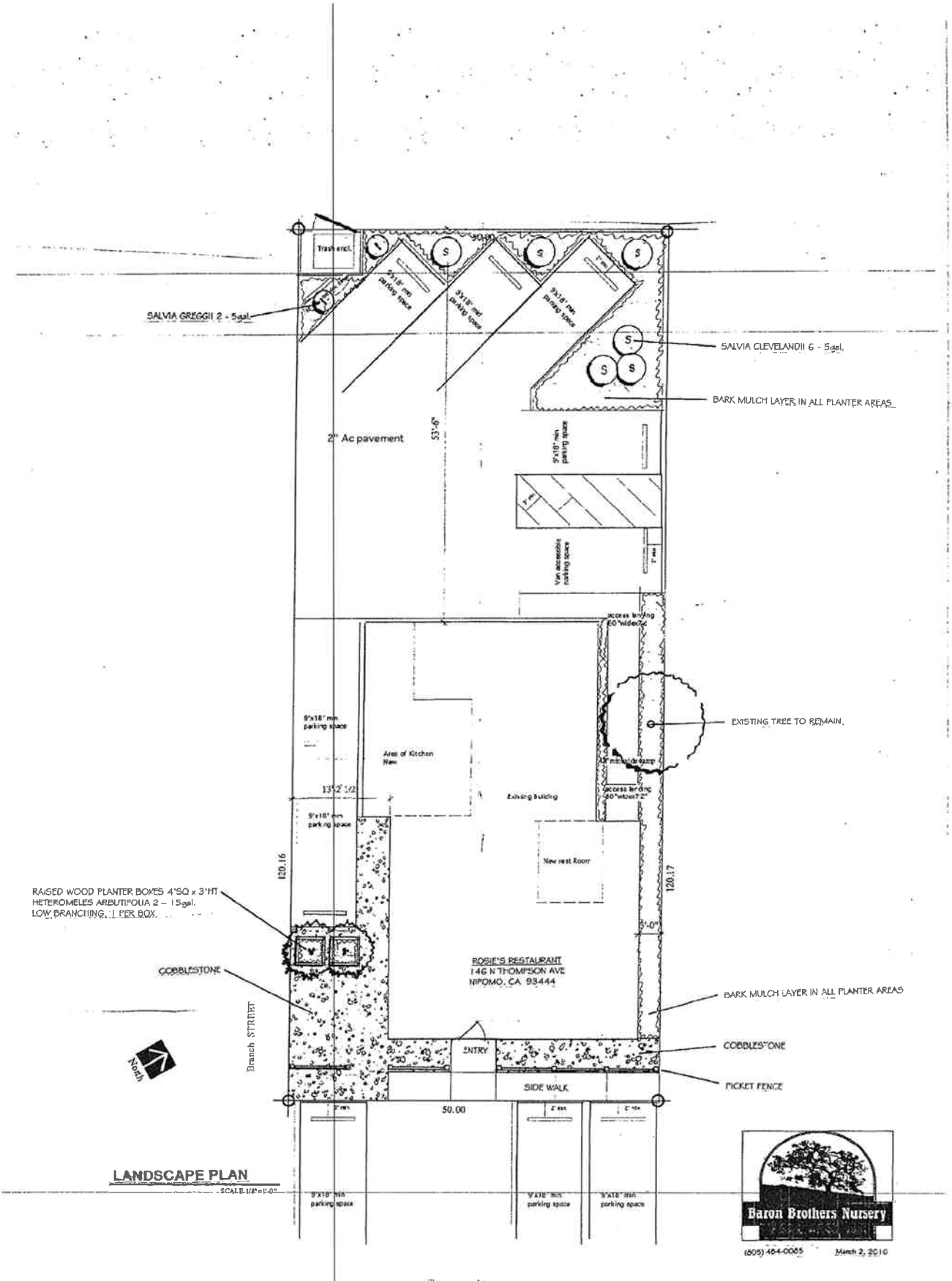
This project is the conversion of a single family residence to a small restaurant. The entire real property, including structure, is located on approximately 6500 square feet. Due to county requirements, the majority of the exterior will be used for parking. A copy of the accompanying landscape plan evidences this fact. The landscape will consist of drought tolerant plant material. There will be no grass used in the landscape. I have spoken to Celeste Whitlow to select plants of low water use. Please find enclosed a letter from Pacific Landscape setting forth water calculations as to projected landscape requirements. As you can see, landscape water use for this project is significantly less than that required for a single family residence.

If there are any additional questions, I will be at the board meeting in May to answer them, or available by telephone at the numbers in your file. Thank you for your cooperation herein.

Very truly yours,

Gregory L. Larson
146 N. Thompson Partnership
805-931-0698
818-383-5802

MAY 1 [illegible]
NIPOMO COMMUNITY SERVICES DISTRICT



LANDSCAPE PLAN

SCALE: 1/8"=1'-0"

Baron Brothers Nursery

(805) 464-0065 March 2, 2010

Rosie's Restaurant

146 North Thompson

Nipomo, CA. 93444

Dear Sirs,

Pacific Landscape Services provides landscape design, installation and maintenance for residential and commercial clients. We are affiliated with Baron Brothers Nursery, wholesale growers of ornamental nursery stock since 1979 with over 270 acres of growing grounds.

The design we provided for Rosie's Restaurant at the above address is intended to be low maintenance and low water use. The plants listed in plan may require between 20-40 gallons of water per week total during spring and summer. Plant watering will be based upon the actual evapotranspiration (ET) rates for the area. The plants are intended to naturalize and utilize seasonal rainfall for survival.

Thank you,

James Baron

President

Pacific Landscape Services

MAY

NIPOMO COMMUNITY SERVICES DISTRICT

7568 Santa Rosa Road. Camarillo, CA. 93012. 805 484-0085 Phone. 805 388-9694 Fax

NIPOMO COMMUNITY SERVICES DISTRICT
RESOLUTION NO. 2010-XXXX

A RESOLUTION OF THE
BOARD OF DIRECTORS OF THE
NIPOMO COMMUNITY SERVICES DISTRICT
APPROVING VARIANCE FOR 146 N. THOMPSON AVENUE

WHEREAS, 146 N. Thompson Partnership ("Applicant") has applied for a variance to waive the requirement for an irrigation meter and related capacity fees, pursuant to Section 1.04 of the District Code. The Application is incorporated herein by this reference; and

WHEREAS, development of 146 N. Thompson Avenue involves the conversion of an existing single family residence to commercial use as a restaurant; and

WHEREAS, conversion to commercial use will result in minimum landscape area due to County of San Luis Obispo on-site parking requirements; and

WHEREAS, landscape water use requirements for the proposed project indicate reduction in total irrigation water demand from current use; and

WHEREAS, the Board of Directors of the Nipomo Community Services District ("District") held a noticed public hearing on Wednesday, July 28, 2010, to receive feedback on the proposed variance as required by Section 1.04 of the District Code; and

WHEREAS, The Board finds that:

- The requirement for an irrigation meter is not practical for the project given the limited projected irrigation water use demand; and
- Granting of this variance will not tend to defeat the purpose of the irrigation meter requirement because of the limited size of the proposed single family residential conversion to commercial development, limited landscape area of the development, and the conditions imposed by this Resolution.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Nipomo Community Services District as follows:

1. The District hereby approves the requested variance subject to the conditions referenced in paragraph 2, below.

2. Conditions of approval.

   A. All representations contained in the Application, including the payment of supplemental water capacity fees and charges, shall be considered conditions of approval.

   B. Applicant's Engineer shall provide a certification that water use will not exceed .4 AFY, the typical single family residential use for a lot size less than 12,768 square feet.

   C. Applicant shall install 1 inch irrigation meter and backflow assembly for future use if water demand exceeds typical single family residential or if property use change increases irrigation water demand.

D. Capacity charge for irrigation meter shall be deferred until water demand limit is exceeded or property use change increases irrigation water demand.

E. If water demand exceeds .4 AFY, applicant shall connect irrigation system to irrigation meter and capacity charge shall be due and payable.

F. Applicant provides District with a title report for the effected parcel.

G. Owner consents to District's recording of a fee due notice on the property that provides for the payment of irrigation meter capacity charges via the property tax bill, if the water demand limit is exceeded.

H. Sewer rates for the project will be based on the Disitrict's commercial sewer rates with no deduct for any irrigation water use through the domestic water meter.

I. The variance will not take effect until the Applicant and property owner (if different from the Applicant) signs this Resolution agreeing to the terms and conditions of approval. Failure to sign within ten (10) days shall constitute non-compliance with said conditions, resulting in the automatic withdrawal of the approval of the variance.

J. The District will not provide water service to the property (for purposes other than residential) until such time as the conditions of the Intent-to-Serve Letter in this variance are satisfied.

K. The variance allowed is hereby conditioned upon the privileges granted herein being utilized within one hundred eighty (180) days after the effective date hereof, and should the privilege authorized hereby fail to be executed or utilized or where some form of construction work is involved, such construction has not actually commenced within such one hundred eighty (180) days, and is not diligently prosecuted to completion, the authority shall become null and void and any privilege or variance granted hereby shall lapse.

The Board of Directors may in its discretion and upon the written request of the Applicant, for good cause, grant a reasonable extension of time in addition to the one hundred eighty (180) days herein provided. Such requests for extension shall be made to the General Manager and within twenty (20) days prior to the expiration of the one hundred eighty (180) day period.

RESOLUTION NO. 2010-XXXX

**A RESOLUTION OF THE
BOARD OF DIRECTORS OF THE
NIPOMO COMMUNITY SERVICES DISTRICT
APPROVING VARIANCE FOR 146 N. THOMPSON AVENUE**

PASSED AND ADOPTED by the Board of Directors of the Nipomo Community Services District this 28th day of July, 2010, on the following roll call vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

_____
James Harrison, President
Nipomo Community Services District

ATTEST:

_____
Don Spagnolo
Secretary to the Board

APPROVED AS TO FORM:

_____
Jon S. Seitz
District Legal Counsel

Acceptance of Conditions:

This variance is hereby accepted upon the express terms and conditions hereof and shall have no force and effect unless and until agreed to in writing by the Applicant or authorized agent. The undersigned hereby acknowledges and approves the terms and conditions and agrees to fully conform and comply with said terms and conditions within the recommended time frames approved by the Nipomo Community Services District Board of Directors.

Date: _____

_____
Greg Larson

_____
Applicant

_____
Property Owner

T:\BOARD MATTERS\RESOLUTIONS\RESOLUTIONS 2010\2010-XXXX 146 N THOMPSON VARIANCE.DOC

TO: BOARD OF DIRECTORS

FROM: DON SPAGNOLO
GENERAL MANAGER

DATE: JULY 20, 2010

AGENDA ITEM
E-4

JULY 28, 2010

DRAFT SOUTHLAND WASTEWATER TREATMENT FACILITY MASTER PLAN AMENDMENT

ITEM

Consider proposed draft Southland WWTF Upgrade Master Plan Amendment #1 [RECOMMEND APPROVAL].

BACKGROUND

Your Honorable Board selected AECOM to provide final engineering design services for Phase 1 of the Southland Wastewater Treatment Facility (WWTF) Upgrade Project. The project is based on the January 2009 Southland WWTF Master Plan. The project as originally envisioned involved an upgrade to 1.25 MGD from the current capacity of 0.9 MGD and included a new influent lift station, screens, grit chambers, Biolac® cells in each of Ponds 1 and 2, two clarifiers, sludge holding lagoons, and two concrete lined sludge drying beds.

AECOM began the final design process by evaluating the flow and loading data since the completion of the Southland WWTF Master Plan and determined that flow and loading was not increasing as quickly as anticipated in the Master Plan. AECOM recommended that the phasing plan for upgrading the plant, including layout and costs, be reevaluated to optimize plant performance at current loads and provide flexibility for future demands. At the March 10, 2010 Board meeting, your Honorable Board approved a budget amendment to AECOM's design contract to develop a revised layout, phasing plan, and updated project costs.

AECOM has now completed the Draft Southland WWTF Master Plan Amendment #1. The proposed amendment has been reviewed by staff as well as the peer review team and the Southland WWTF Upgrade Project Committee. Once the Master Plan Amendment is approved by the Board, AECOM can proceed with final design of the plant upgrade.

FISCAL IMPACT

The FY 10-11 Budget includes $2,000,000 in Town Sewer Capacity Charges Fund (Fund #710) for the Southland WWTF Upgrade Phase 1 design services, environmental review services and construction with additional funding expected in FY 11-12 and possibly FY 12-13. The Phase 1 construction cost, including contingency, is still $8.9 million based on the cost estimate in the proposed Master Plan Amendment.

RECOMMENDATION

Staff recommends that the Board receive AECOM's presentation, ask questions as appropriate and approve the Southland WWTF Master Plan Amendment #1.

ATTACHMENT

- June 2010 Southland WWTF Master Plan Amendment #1

Nipomo Community Services District

Southland Wastewater Treatment Facility Master Plan Amendment #1 (DRAFT)

Nipomo Community Services District

PO Box 326; Nipomo, CA 93444
T 805.929.1133; F 805.929.1932
www.ncsd.ca.gov

General Manager	Don Spagnolo, PE
District Engineer	Peter Sevcik, PE
Utility Superintendent	Tina Grietens

AECOM

1194 Pacific Street, Suite 204: San Luis Obispo, CA 93401
T 805.542.9840; F 805.542.9990
www.aecom.com

Project Manager	Mike Nunley, PE
Project Engineer	Eileen Shields, PE

Introduction

As part of the preliminary design effort for the Southland Wastewater Treatment Facility (WWTF) Upgrade Project, the Nipomo Community Services District (District) has been providing AECOM with recent wastewater influent monitoring data. AECOM has been using the data to update design parameters and to predict startup conditions for plant improvements. The updated flow and BOD loading projections using the new data are considerably lower than those estimated in the January 2009 Southland WWTF Master Plan and preceding reports. These findings are summarized in a memorandum dated February 12, 2010, included as Appendix A.

As described in the memorandum, influent wastewater flows and BOD concentrations have "decreased" since 2004, either due to an actual flow reduction or to more accurate flow recording techniques used at the WWTF. As a result, the startup influent conditions for the WWTF Upgrade Project will likely be less than previously anticipated, requiring revisions to the phasing plan described in the Southland WWTF Master Plan (AECOM, January 2009).

Scope of Work

AECOM's scope of work for this Amendment #1 included the following tasks:

- Review of current WWTF flows and BOD loading;
- Develop a revised site plan, including sizes and phases of process equipment, basins, and appurtenances;
- Develop updated opinions of probable construction cost for each of the proposed phases of the project through Master Planned future flows; and
- Provide updated opinions of the annual operations and maintenance costs.

Existing Flows and Loading

Flows

Daily flow totals from September 2007 through August 2009 were examined (Figure 1) for the basis of this evaluation. Two flow values appear to be outliers from the data set: (1) A total flow of 0.067 million gallons (MG) reported on September 21, 2007 and (2) a total flow of 1.184 MG reported on September 26, 2007. The average daily flow over the study period is 0.571 million gallons per day (MGD), with a standard deviation of 0.0974 MGD. The high flow reported on 9/26/07 is larger than the average plus six times the standard deviation, and the low (9/21/007) is smaller than the average minus five times the standard deviation. Considering the large variance from the average, these two flow values were disregarded for this analysis.

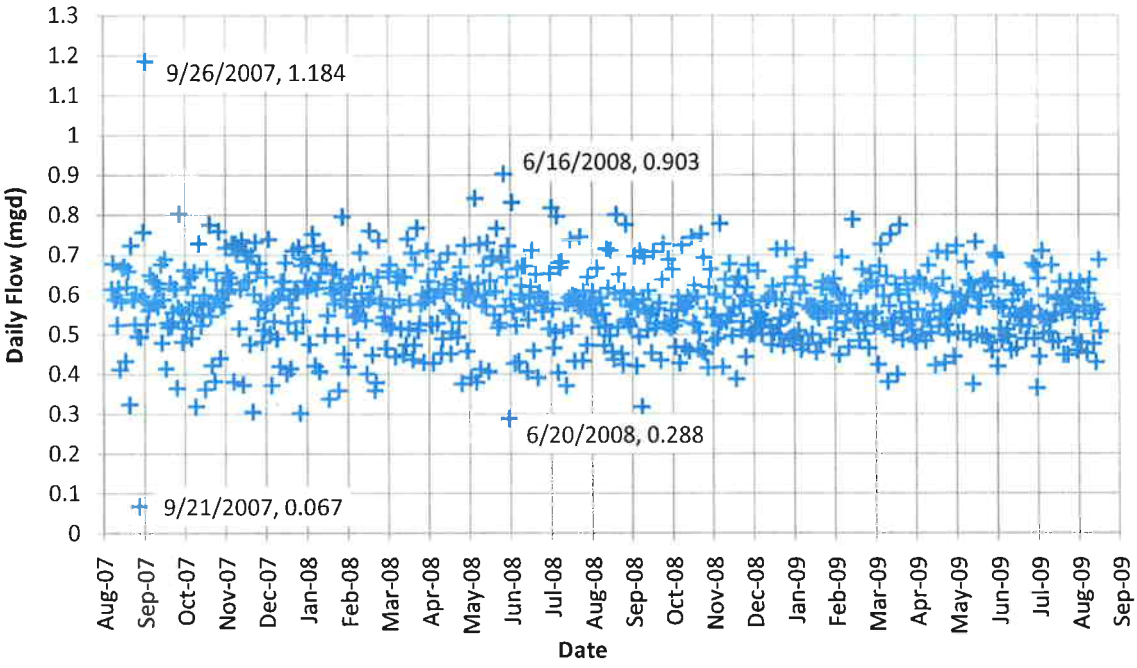


Figure 1 Southland WWTF Daily Flows

The 30-day average daily flow (ADF) and peak daily flow (PDF) were calculated for each month (Table 1), disregarding the two outlier values in September 2007. Also included in Table 1 are monthly precipitation data measured at the Southland WWTF by San Luis Obispo County.

Several flow conditions analyzed in the Facility Master Plan were updated using this new set of flow data:

The *Average Annual Flow (AAF)* is the flow rate averaged over the course of the year and is the base flow for the WWTF. Collection and analysis of 2 years of historical flow data (September 2007 through August 2008) yielded an AAF of 0.57 million gallons per day (MGD).

Average Wet Weather Flow (AWWF) is defined as the average daily flow during "wet" months, or months that experience a total rainfall greater than 0.5 inches. San Luis Obispo County provided precipitation data, collected from a gauge at the WWTF. Flow and rainfall records indicate the service area has an AWWF of 0.57 MGD.

Maximum Month Flow (MMF) is an important design flow for the Waste Discharge Requirements (WDR's) since it is the basis of the WWTF's permitted capacity. MMF is defined as the average daily flow during the maximum month. Flow records for the past two years indicate a MMF of 0.613 MGD. The MMF occurred during the month of June 2008.

Peak Day Flow (PDF) is the maximum daily flow rate experienced at the WWTF. PDF is used for design of several WWTF components, including clarifiers and sludge pumping facilities. Flow records indicate the PDF is 0.903 MGD (June 16, 2008).

Peak Hour Flow (PHF) is the maximum one-hour flow experienced by the system, and can usually be derived from WWTF records, flow monitoring, or empirical equations used to estimate PHF based on service area population. It is important for design of pumps, pipes, screens, flow meters, grit removal devices and clarifiers. Data from the SCADA system was analyzed to determine the PHF. Flow is currently measured and recorded at 15-minute intervals. Data from September 2007 through August 2008 indicates the PHF was 1.65 MGD (8/10/2008 11:00 AM). This value was used to approximate existing conditions and calculate a peaking factor used to project future flow conditions.

Peak Dry Weather Flow (PDWF) is the maximum daily flow rate recorded at the WWTF during months when less than 0.5 inches of rain occurs. PDWF for the WWTF is 0.903 MGD (June 16, 2008).

Peak Wet Weather Flow (PWWF) is the maximum daily flow rate recorded at the WWTF during months when 0.5 inches or more rain is recorded. The larger of the PWWF and the PDWF is used as the PDF (0.903 as described above). PWWF for the District is 0.796 MGD (February 18, 2008).

Table 1 Influent Flows and Area Precipitation

Month	ADF (MGD)	PDF (MGD)	Precip (in)
Sep-07	0.580 *	0.757 *	0.00
Oct-07	0.575	0.803	0.27
Nov-07	0.578	0.775	0.00
Dec-07	0.594	0.739	2.77
Jan-08	0.583	0.752	9.03
Feb-08	0.573	0.796	2.91
Mar-08	0.570	0.760	0.03
Apr-08	0.578	0.767	0.00
May-08	0.569	0.842	0.00
Jun-08	0.613	0.903	0.00
Jul-08	0.583	0.818	0.00
Aug-08	0.570	0.745	0.00
Sep-08	0.568	0.801	0.00
Oct-08	0.561	0.727	0.00
Nov-08	0.570	0.778	0.00
Dec-08	0.552	0.674	0.52
Jan-09	0.563	0.715	0.63
Feb-09	0.559	0.693	3.89
Mar-09	0.572	0.788	1.68
Apr-09	0.564	0.774	0.65
May-09	0.569	0.732	0.14
Jun-09	0.553	0.703	0.00
Jul-09	0.553	0.709	0.00
Aug-09	0.554	0.687	0.00
	AAF = 0.571	**PDF = 0.903**	**MMF = 0.613**
	ADWF = 0.571	avg PDWF = 0.769	max PDWF = 0.903
	AWWF = 0.570	avg PWWF = 0.741	max PWWF = 0.796
Precipitation data collected from onsite rain gauge and provided by SLO County.			
* Outlier daily values were removed to calculate monthly ADF and PDF			

Infiltration and Inflow

The Facility Master Plan found no indication of significant inflow or infiltration influence on the WWTF flows. The updated flow data were compared to monthly area precipitation totals to re-examine the potential impact of inflow and infiltration. *Infiltration* is the water entering a sewer system and service connections from groundwater, through such means as defective pipe, pipe joints, connections, or manhole walls. *Inflow* is the water discharged to into a sewer system and service connections from such sources as roof and foundation drains, manhole covers, cross connections from storm sewers, and catch basins. Figure 2 compares the total precipitation, as measured by San Luis Obispo County at the WWTF, with the average daily flow for each month between September 2007 and August 2009. Typically,

potential influence of infiltration on treatment plant flow rates can be estimated by observing patterns in the total rainfall plotted with the average daily flows for each month. Based on comparison of rainfall and monthly flows, it appears infiltration is not significant.

The impact of inflow can be estimated by the difference between wet weather and dry weather peak daily flows. Plant records indicate peak daily flows during wet weather months are generally less than dry weather peak day flows (Table 1), suggesting that inflow is not a significant contribution to wastewater flows.

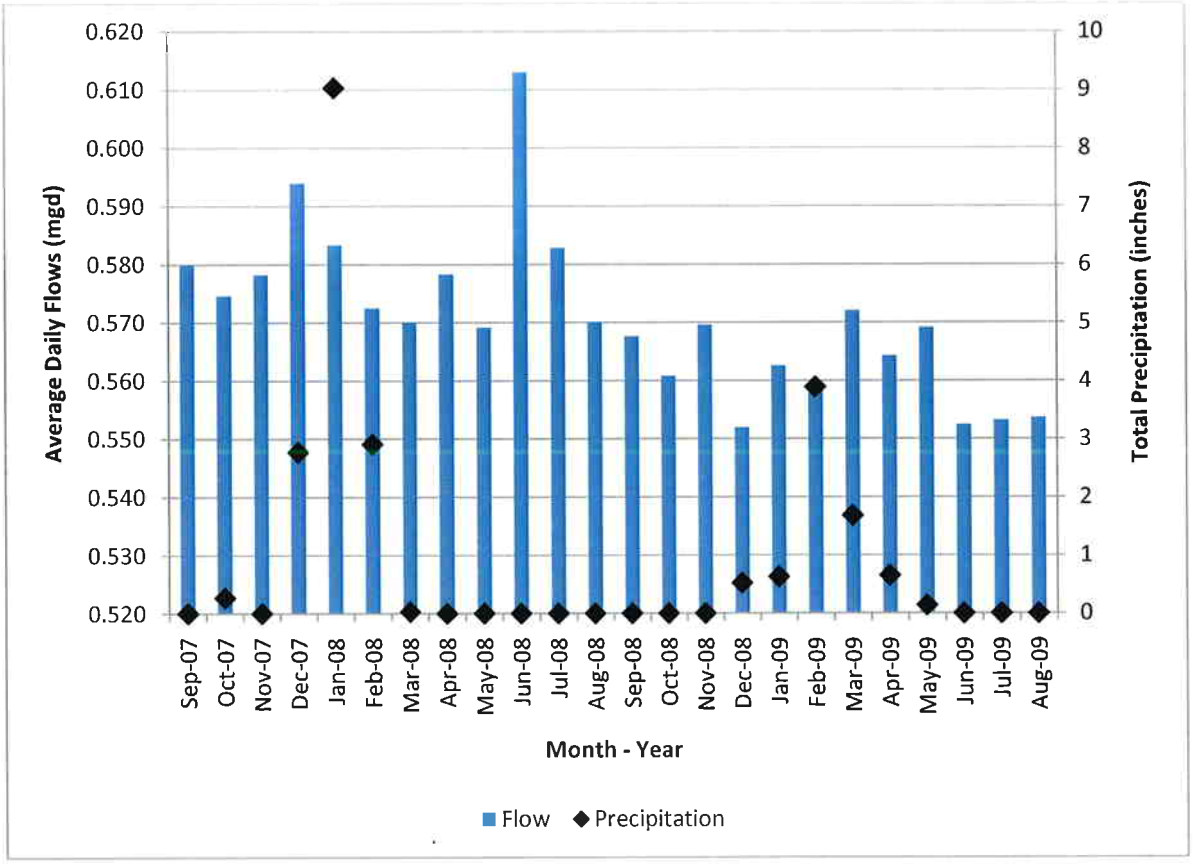


Figure 2 Southland WWTF Monthly Average Daily Flows and Total Precipitation

Flows Used in Capacity Analysis

Infiltration and inflow are not considered significant for this capacity analysis. The 2-year annual average flow (AAF), peak daily flow (PDF), and peak hourly flow (PHF) were utilized to analyze existing and future capacity. Table 2 contains the flow conditions and corresponding peaking factors.

Table 2 Summary of Existing Flow Conditions and Peaking Factors

Flow Condition	Existing Flow (MGD)	Peaking Factor
Average Annual Flow (AAF)	0.571	--
Maximum Monthly Flow (MMF)	0.613	1.07
Peak Daily Flow (PDF)	0.903	1.58
Peak Hourly Flow (PHF)	1.65	2.89

Existing Plant Loading

The solids and organic loading as determined by total suspended solids and BOD concentrations in domestic wastewater are an important factor for determining the capacity of a WWTF. The loading is estimated through monitoring flow rates and concentrations of five-day biological oxygen demand (BOD_5) and total suspended solids (TSS) of the influent wastewater. The Southland WWTF measures influent BOD_5 and TSS weekly. Monitoring records from September 2007 through August 2009 (two years of data) were reviewed to estimate existing plant loading (Table 3). Loading conditions (lb/day) are estimated by multiplying the average concentration by the average daily flow rate for the month.

Table 3 Existing BOD and TSS Loading Data

Month-Year	Average Daily Flow (MGD)	Monthly Average BOD_5 (mg/L)	Monthly Average TSS (mg/L)	Average Daily BOD_5 loading (lb/day)	Average Daily TSS loading (lb/day)
Sep-07	0.580	297	208	1,437	1,006
Oct-07	0.575	272	244	1,304	1,170
Nov-07	0.578	273	290	1,318	1,398
Dec-07	0.594	243	188	1,205	931
Jan-08	0.580	238	252	1,150	1,219
Feb-08	0.590	262	*408	1,288	*2,008
Mar-08	0.570	290	*333	1,379	*1,583
Apr-08	0.580	247	262	1,196	1,267
May-08	0.570	252	274	1,197	1,303
Jun-08	0.610	242	194	1,230	987
Jul-08	0.580	237	240	1,144	1,161
Aug-08	0.570	264	205	1,255	975
Sep-08	0.570	252	230	1,196	1,093
Oct-08	0.560	227	200	1,059	934
Nov-08	0.570	220	208	1,043	989
Dec-08	0.550	287	216	1,316	991
Jan-09	0.560	256	*179	1,193	*836
Feb-09	0.540	247	218	1,114	982
Mar-09	0.570	279	234	1,325	1,112
Apr-09	0.560	271	231	1,265	1,079
May-09	0.570	223	*90	1,061	*428
Jun-09	0.550	245	*142	1,123	*651
Jul-09	0.550	243	*89	1,114	*408
Aug-09	0.550	218	*95	999	*436
AVERAGE				1,205	* 1,039
MINIMUM				999	*408
MAXIMUM				1,437	*2,008

Notes: * Average TSS concentrations and loadings are suspected to be inaccurate due to inconsistent weekly concentrations

The BOD data shown in Table 3 is relatively consistent, providing a level of confidence in the data. However, the TSS data is inconsistent, with average monthly concentrations ranging from 89 to 408 mg/L. Inconsistent data is indicated in Table 3 with an asterisk (*). Because of the inconsistencies reported on the TSS concentrations, TSS loading is conservatively assumed to be equal to the BOD loading. Table 4 contains the assumed plant loading to be used for existing conditions and for projecting future conditions.

Table 4 Existing Influent Loading Rates

	Average Daily BOD_5 loading (lb/day)	Average Daily TSS loading (lb/day)
AVERAGE	1,200	1,200
MINIMUM	1,000	1,000
MAXIMUM	1,450	1,450
Notes: Data from Table 3 used. TSS loading assumed to be equal to BOD_5 loading, due to inconsistent TSS concentrations.		

Projected Flows

As presented above, WWTF records from the past two years revealed an AAF of 0.57 MGD. Based on direction from the District, the projected buildout[1] AAF from the January 2009 Southland WWTF Master Plan was used in this Amendment #1. Table 5 shows the existing and projected flow rates under various design flow conditions.

The peaking factors were established based on existing flow rates. The peaking factor for a particular flow condition is calculated by dividing the value for that condition by the AAF. For example, the peaking factor for MMF is calculated by dividing the MMF (0.61 MGD) by the AAF (0.57 MGD), which equals 1.07, or 1.1 when rounded upwards. Peaking factors are then used to project future values for the various flow conditions. For example, buildout MMF is estimated by multiplying the projected AAF (1.67 MGD) by the MMF peaking factor (1.1), for a projected buildout MMF of 1.79 MGD. This same process was used for PDF and PHF.

Table 5 Existing and Projected Influent Flow Rates

Flow Condition	Peaking Factor	Existing Flow (MGD)	Buildout Flow (MGD)
Average Annual Flow (AAF)	--	0.57	1.67
Maximum Monthly Flow (MMF)	1.1	0.61	1.79
Peak Daily Flow (PDF)	1.6	0.90	2.64
Peak Hourly Flow (PHF)	2.9	1.65	4.83

Projected Loads

Future influent WWTF loading in terms of BOD and TSS can be projected using a ratio of existing and projected future flow rates. This assumes that the future wastewater characteristics will not differ

[1] Buildout as defined by the Land Use and Circulation Elements of the SLO County General Plan for South County - Inland (revised June 23, 2006)

significantly from the existing wastewater (the ratios of domestic to commercial and industrial wastewater sources will remain relatively constant).

Table 6 Existing and Projected Influent Loading Rates

	Existing	Buildout
AAF (MGD)	0.57	1.67
Average Annual BOD_5 Loading (lb/day)	1200	3520
Average Annual TSS Loading (lb/day)	1200	3520
MMF (MGD)	0.61	1.79
Maximum Monthly BOD_5 Loading (lb/day)	1450	4260
Maximum Monthly TSS Loading (lb/day)	1450	4260
Minimum Monthly BOD_5 Loading (lb/day)	1000	2930
Minimum Monthly TSS Loading (lb/day)	1000	2930

Frequency diagrams are useful for determining design conditions when planning wastewater treatment plant improvements. A frequency diagram was created for BOD_5 influent concentrations (Figure 3) revealing that 90% of the time the influent BOD_5 concentration is less than 300 mg/L. The 90th percentile TSS concentration is assumed to be the same.

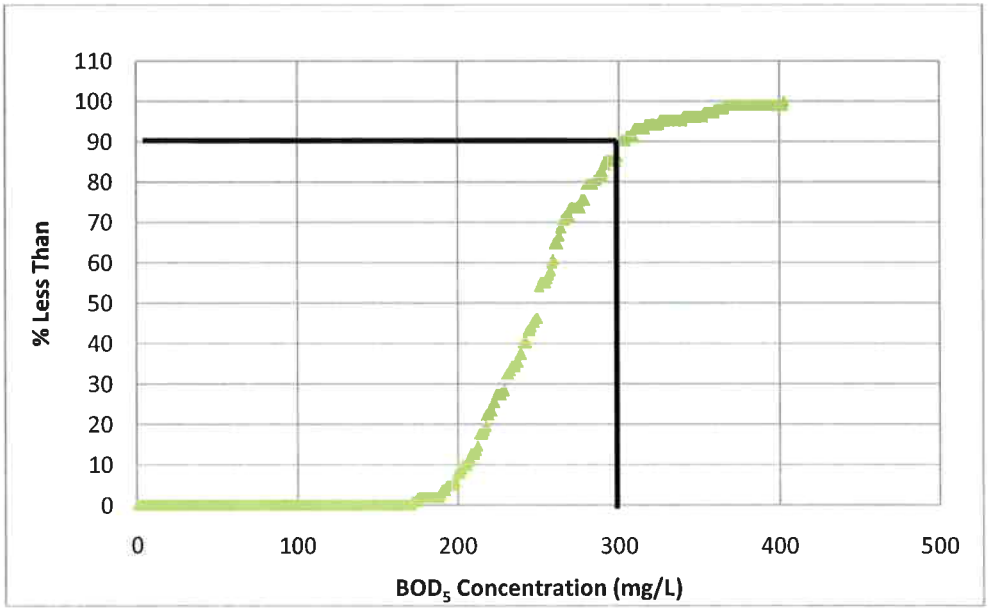


Figure 3 Influent BOD_5 Frequency Diagram (Sept 2007 – Aug 2009)

Recommended Improvements

Influent Lift Station

The January 2009 Facility Master Plan examined the capacity of the existing lift station and recommended that the District budget for a lift station replacement. The wet well was found to be undersized for existing conditions and the capacity of the pumps were insufficient for future flows. Current operational issues include frequent pump clogging from rags and large materials and power supply imbalances, causing temporary pump failure. The Facility Master Plan recommended installation of screw centrifugal pumps (which have better solids-handling characteristics than the existing submersible pumps) to reduce clogging and a solid-state starter or slightly oversized motor on the pumps to reduce impacts of the power supply imbalances. VFDs were also evaluated and, while a viable solution, relatively high cost and complexity were considered to be a disadvantage. Instead new power supply infrastructure was the selected solution. A new flow-metering manhole was also recommended.

Our recommendations for the influent lift station have not changed from those in the January 2009 Facility Master Plan. We recommend the District budget for a lift station replacement, with a new flow metering manhole, new wet well and three screw centrifugal pumps, sized so that any two can handle the buildout peak hour flow. Design flows have been modified as summarized in Table 5.

Screening

Two screeing technologies were evaluated in the January 2009 Facility Master Plan: shaftless spiral and in-channel moving screens. Each screen would feature 6-mm openings, all stainless steel hardware of wetted parts, pressure wash capability, and capacity for future PHF. Two shaftless screw screens in parallel operation, each with 100% PHF capacity were recommended. The shaftless screw screens require lower capital cost and provide better compaction and dewatering of solids than a mechanical bar screen. Our recommendation has not changed from the January 2009 Facility Master Plan. The design flows have changed as summarized in Table 5. The effect of the updated flows has been evaluated and it has been determined that they will not affect AECOM's recommendation for the screening technology.

Grit Removal

Two technologies were investigated for grit removal in the January 2009 Facility Master Plan: vortex and aerated systems. A vortex grit removal system, with vortex flow and tangential entry grit trap (such as the Jones & Attwood Jetair) and a screw classifier, was recommended to separate inorganic solids from influent wastewater. While the capital costs are higher, the vortex system typically requires less maintenance than an aerated grit chamber which requires regular repair and replacement of air valves, fittings, diffusers, and piping in the basins. Two units, each with capacity to handle 50% of the projected buildout PHF, were recommended. Our recommendation has not changed from the January 2009 Facility Master Plan. The design flows have changed as summarized in Table 5. The effect of the updated flows has been evaluated and it has been determined that they will not affect AECOM's recommendation for the vortex grit removal system. However, it will impact the phasing recommendation as described below.

Extended Aeration

The January 2009 Facility Master Plan evaluated four treatment upgrade and/or expansion alternatives: additional aerated lagoons (current technology), the Biolac® wave oxidation system, conventional activated sludge, and oxidation ditch system technologies. The Biolac® system was recommended because of the high level of treatment, future flexibility, relatively low capital and operating costs, and relative ease of routine operations and maintenance. Two Biolac® basins and two secondary clarifiers were recommended for the project. The two new basins and clarifiers were to be installed within the existing footprint of two of the four current aerated ponds.

The main disadvantage to the Biolac® system identified in the Master Plan was the increased maintenance and control requirements. However, this is inherent in the higher level of technology, delivering a higher quality of effluent. For the level of treatment, the Biolac® system appears to be the easiest to maintain, with simple, accessible parts, relatively inexpensive to replace, and lower capital cost when compared with the other technologies reviewed in the Master Plan.

Based on the revised flows and loadings, the design recommendations are modified as follows:

- Install earthen berms along the center of two of the existing ponds to create four smaller cells.
- Phase construction of three basins as described below.

Secondary Clarifiers

Two circular secondary clarifiers were recommended in the January 2009 Facility Master Plan as part of the treatment process upgrade. The Biolac® system is designed as a completely mixed system. Suspended solids in the mixed liquor are conveyed to the secondary clarifiers. Secondary clarifiers provide settling of the missed liquor suspended solids (MLSS) to reduce the TSS concentration in the effluent. The settled solids, rich in biology, is then returned to the front of the extended aeration process for enhancement of biological treatment ("return activated sludge," RAS). As needed, part of the sludge stream is wasted to solids handling facilities ("waste activated sludge," WAS).

In consideration of the revised flows and loadings, three smaller (45-foot diameter) circular secondary clarifiers are recommended with phasing described below. The clarifiers will be below grade to allow for gravity flow from the aeration basins. Sidewater depth is anticipated to be between 12- and 16-feet, and will be determined during the concept design phase.

RAS/WAS Pumping Station

The RAS/WAS pumping station will consist of a wet well equipped with solids-handling submersible pumps capable of handling 150% of the PDF with the largest pump out of service.

Aerobic Digester Conversion

The January 2009 Master Plan recommended construction of a sludge holding facility that would provide anaerobic digestion of the sludge and flow equalization of sludge flows prior to solar drying. The original plan consisted of converting two of the four existing aeration ponds to sludge holding ponds and

installing brush aerators on them to maintain an aerobic zone at the surface. This would prevent odors without mixing and aerating the entire pond volume.

AECOM is currently recommending installation of two berms in one of the existing ponds to create three cells and using existing surface aerators to promote aerobic digestion. This does present an increase in capital cost over the original proposal; however, it will provide the following advantages:

- Reduction of the total dry tons of sludge in the range of 30% to 60% depending on retention time;
- Reduction of odors from the drying beds during solar drying, as a result of removing volatile organic solids through aerobic digestion; and
- Pathogen inactivation.

As proposed, each aerobic digester would include the following features:

- Impermeable lining (HDPE or suitable material);
- Relocation of existing conventional aerators from the District's current treatment pond system for mixing and aeration;
- Sidewater depth of 11 feet;
- Approximate volume of 1.17 million gallons, which would provide approximately 10 - 20 days of hydraulic retention time at Phase 3 flows, depending on recirculation rates. One cell could be out of service for maintenance or settling/sludge transfer operations and the system will still provide adequate hydraulic retention time;
- Transfer of sludge into the digesters will be performed by the WAS pumping system; and
- Transfer of sludge out of the digesters will be performed by a portable transfer pump that will be purchased separately by the District. Buried pipelines and appropriate pump connections will be provided to allow District staff to pump supernatant from the digesters to the plant headworks and to pump sludge to the drying beds. A flexible pipe can be adjusted by operations staff to different depths to draw either sludge or supernatant from the ponds.
- An alternative transfer option was evaluated as described below.

It is assumed that each digester cell will automatically receive WAS from the clarifiers, and the manual transfer pump will be operated in coordination with wasting activities in order to keep a minimum volume of sludge in each cell. By constructing multiple cells, redundancy is provided so that aerators can be deactivated and settling can occur in a cell prior to transferring sludge. This activity can be performed while the WAS pumps continue to deliver WAS to the other cell(s).

The number and spacing of aerators will be based on oxygen and mixing requirements, balanced with size limits of the cells and assumed area of influence for each aerator.

Alternatives to In-Ground Aerobic Digesters with Manual Transfer Pump

The transfer of sludge out of the digesters using a portable transfer pump may be a labor intensive operation. Above-grade aerated tank digesters were considered. However, at $1,500,000 to $2,000,000, this option was determined cost-prohibitive at this time.

AECOM evaluated an alternative to using a portable transfer pump. The alternative consists of permanent piping from the digesters to a wet well with a solids-handling pump, along with a discharge manifold and piping to the drying beds. Two pipes would be constructed from the pond to the wetwell – one at the pond floor for removing sludge, and a second pipe at the same elevation that would be connected to a flexible pipe and floating outlet for decanting the pond. A connection to the plant's non-potable water system would add the ability to flush the sludge suction line just before the sludge pumping. Before sludge is removed, the digester aerators would be turned off, allowing the sludge to settle for a day or two. Supernatant would be drawn from the decanter and pumped to the headworks for treatment. After decanting, the aerators would be utilized to stir the settled sludge. Then sludge would be pumped from the bottom of the digesters to the drying beds for solar drying.

AECOM prepared a planning-level opinion of probable construction cost for this addition to the sludge digesters and estimate a range of $150,000 to $180,000 for Phase 1 (in addition to the cost to construct the digesters in the existing pond). An additional pump may be required for Phase 3, along with piping, valves, and decanter. The cost opinion for this addition to the Phase 3 sludge digester is approximately $90,000 to $100,000.

The current plan (portable transfer pump and flexible sludge suction / decanting pipeline) is preferred. Permanent piping, valves, and submersible pumps present clogging and maintenance issues. A portable transfer pump completes the function with greater accessibility and operational flexibility at a lower cost. In addition, the pump can be used for other maintenance functions around the plant or in the collection system. For this reason, AECOM recommends the portable transfer pump.

Sludge Drying Beds

The District currently utilizes two sludge drying beds. The January 2009 Facility Master Plan recommended upgrading the existing sludge drying facilities with a concrete liner and decant system. Decanted water would be pumped to the WWTF's headworks for treatment. Two new sludge drying beds with concrete liners and a decanting system were recommended for the future phase.

Recommendations for the upgrades and new construction have not changed. The concrete liner will protect groundwater quality and allow operators to drive equipment into the drying beds for more effective drying and disposal operations. Phasing recommendations are described below.

Prior Phasing Plan

Two phases were recommended in January 2009 Facility Master Plan. The first phase included the following:

- Upgrade of the Frontage Road influent sewer line from 12-inch to 21-inch
- Influent lift station upgrade

- (2) Shaftless Screw Screens
- (2) Vortex Grit Removal Systems
- (2) Biolac Basins with aeration equipment sufficient to meet 75% of buildout
- (2) Circular Secondary Clarifiers
- Conversion of two existing ponds into sludge holding lagoons
- Upgrade two existing sludge drying beds with concrete liner and decant system

Phase two included additional aeration equipment for the Biolac system and two new sludge drying beds with concrete liners and decant systems.

Current Phasing Plan

Based on the revised flows and loadings, three phases are recommended with details as follows. Figure 1 shows the phasing plan and layout. Tables 7 through 9 summarize the major system components for each phase.

Table 7 Phase 1 Components

Major System Component	Notes
Influent lift station	Install new wetwell, designed for future phasing; ▪ New flow monitoring manhole and associated instrumentation; and ▪ Two screw centrifugal pumps with associated valves, piping, and controls.
Shaftless screw screens	Two will be installed and can handle future flows.
Vortex grit removal system & screw classifier	One will be installed with a configuration that is compatible with a second future grit chamber and classifier.
Biolac System	Regrade side slopes in one existing pond (Pond 1) to 2:1 side slopes. Install earthen berm in existing Pond 1 to create two basins; ▪ New plastic liner in one basin (Aeration Basin #1); ▪ Air piping and air headers for two basins (Aeration Basins #1 & #2); ▪ Controls for two basins (Aeration Basins #1 & #2); ▪ Three blowers; and ▪ Aeration equipment in one basin (Aeration Basin #1).
Secondary Clarifiers	Construct one 45-foot diameter secondary clarifier; ▪ RAS/WAS pump station designed for future phases; and ▪ Distribution boxes designed for future phases.
Aerobic Sludge Digesters	Install two earthen berms in one existing pond (Pond 4) to create three cells; ▪ New plastic liner in two basins; and ▪ Existing surface aerators to two basins.
Sludge Drying Beds	Construct two new drying beds with concrete liners and decant system; and ▪ Decant pump station to return decant water to the headworks.

Table 8 Phase 2 Components

Major System Component	Notes
Influent Lift Station	Install one screw-centrifugal pump and associated valves, piping, and controls (for total of three pumps).
Biolac System	Install new plastic liner in second basin (Aeration Basin #2); ▪ One additional blower; and ▪ Aeration equipment in second basin (Aeration Basin #2).
Secondary Clarifiers	Install one 45-foot diameter secondary clarifier.
Sludge Drying Beds	Construct concrete liners & decant system in one existing drying bed.

Table 9 Phase 3 Components

Major System Component	Notes
Vortex grit removal system & screw classifier	Install a second grit removal system and screw classifier.
Biolac System	Regrade side slopes in one existing primary pond (Pond 2) to 2:1 side slopes. Install earthen berm in existing Pond 2 to create two basins; ▪ New plastic liner in one basin (Aeration Basin #3); ▪ Air piping and air headers for one basin; ▪ Controls for one basin; and ▪ Aeration equipment in one basin (Aeration Basin #3).
Secondary Clarifiers	Construct one 45-foot diameter secondary clarifier. Install one additional pump in RAS/WAS pump station.
Aerobic Sludge Digesters	Install new plastic liner in one basin; and ▪ Existing surface aerators in one basin
Sludge Drying Beds	Install concrete liners & decant system in one existing drying bed.

Capacities and Phasing Triggers

Aeration basin capacity is the limiting factor in the overall plant capacity. Capacity assumptions are based on several variables, including anticipated plant loading, aeration basin volume, aeration equipment capabilities, pond dimensions and required aeration spacing. Capacities and phasing triggers between Phases 1 and 2 will be confirmed during concept design. The planning-level project phase capacities and planning "triggers" are summarized in Table 10 and described below.

Phase 1 will be designed to improve treatment, but not expand the existing capacity of the plant (currently rated for a MMF of 0.9 MGD). We recommend that the "trigger" to begin planning for Phase 2 construction is the occurrence and calculation of a 30-day average flow equal to 80% of the Phase 1 capacity, or 0.7 MGD. Phase 2 includes a second aeration basin and clarifier. In Phase 2, the plant will be able to operate with one aeration basin out of service for average flow rates up to 1.28 MGD.

For process redundancy and operation flexibility, we recommend a planning "trigger" for construction of Phase 3 is occurrence of a monthly flow equal to 80% of the minimum required loading for three aeration basins, which is equivalent to approximately 1.70 MGD. The corresponding "trigger" is a 30-day average flow equal to 1.37 MGD. Following implementation of Phase 3, the plant will be able to operate with one aeration basin out of service (and two basins running) for average flow rates up to 1.8 MGD.

Table 10 Project Phasing Capacities and Planning Triggers

Project Phase	Capacity (MMF, MGD)	Planning Trigger (MMF, MGD)
Phase 1	0.9	--
Phase 2	1.28	0.7
Phase 3	1.80	1.4

Opinion of Probable Construction Cost

AECOM developed updated opinions of the project construction costs for each phase. Table 11 summarizes the costs per major component. The total probable construction cost opinion for Phase 1 is approximately $8.9 million, including a 25% project contingency and escalated to the anticipated midpoint of construction.

Table 11 Phase 1 Construction Cost Opinion

Project Component	**Cost**
Influent Pump Station	$571,600
Spiral Screening System	$371,600
Grit Removal System	$284,100
Extended Aeration System (Biolac®)	$1,834,200
Secondary Clarifiers	$1,837,100
Aerobic Sludge Digesters	$166,300
New Drying Beds	$992,300
Controls & Blower Building	$232,600
Non-Potable Plant & Irrigation Water Systems	$191,200
Site Piping	$642,000
Subtotal	***$7,123,000***
Contingency (25%)	*$1,780,750*
Total Construction Cost Opinion (rounded to 1000)	***$8,904,000***

Notes:
1. ENR CCI (April 2010) = 8677
2. Phase 1 costs are escalated by 2% per year to midpoint of construction (estimated 1/10/2012).
3. Construction costs do not include design fees, construction managements fees, permitting fees, or other "non-construction," project related costs.
4. The opinion of probable construction cost prepared by AECOM represents our judgment and is supplied for general guidance to the District. Since AECOM has no control over the cost of labor and materials, or over competitive bidding or market conditions, AECOM does not guarantee the accuracy of such opinions as compared to contractor bids or actual costs.

Probable construction cost opinions for Phase 2 and Phase 3 were developed, and summarized in Tables 12 and 13. The costs listed are April 2010 dollars, and not escalated. A 30% contingency was added to the base construction cost opinion. The cost opinion for Phase 2 came to approximate $2.28 million. The Phase 3 cost opinion came to approximately $2.84 million.

Table 12 Phase 2 Construction Cost Opinion

Project Component	Cost
Influent Pump Station	$102,500
Extended Aeration System (Biolac®)	$586,040
Secondary Clarifiers	$901,000
Upgrade Existing Drying Beds	$165,000
Subtotal	**$1,755,000**
Contingency (30%)	$526,500
Total Construction Cost Opinion (rounded to 1000)	**$2,282,000**

Notes:
1. ENR CCI (April 2010) = 8677
2. Phase 2 costs are not escalated.
3. Construction costs do not include design fees, construction managements fees, permitting fees, or other "non-construction," project related costs.
4. The opinion of probable construction cost prepared by AECOM represents our judgment and is supplied for general guidance to the District. Since AECOM has no control over the cost of labor and materials, or over competitive bidding or market conditions, AECOM does not guarantee the accuracy of such opinions as compared to contractor bids or actual costs

Table 13 Phase 3 Construction Cost Opinion

Project Component	Cost
Grit Removal System	$270,900
Extended Aeration System (Biolac®)	$704,210
Secondary Clarifiers	$974,125
Aerobic Sludge Digesters	$15,700
Upgrade Existing Drying Beds	$165,000
Site Piping	$52,800
Subtotal	**$2,183,000**
Contingency (30%)	$654,900
Total Construction Cost Opinion (rounded to 1000)	**$2,838,000**

Notes:
1. ENR CCI (April 2010) = 8677
2. Phase 3 costs are not escalated.
3. Construction costs do not include design fees, construction managements fees, permitting fees, or other "non-construction," project related costs.
4. The opinion of probable construction cost prepared by AECOM represents our judgment and is supplied for general guidance to the District. Since AECOM has no control over the cost of labor and materials, or over competitive bidding or market conditions, AECOM does not guarantee the accuracy of such opinions as compared to contractor bids or actual costs

Power and Replacement Costs

Power consumption and periodic Biolac replacement costs were estimated for Phase 3 (Table 13). Power consumption was estimated for the major treatment equipment only, including the influent lift station pumps, blowers for the Biolac aeration basins, surface aerators in the aerobic sludge digesters, RAS/WAS pumps, and included an allowance of 131,000 kilowatt-hours per year (kwh/yr) for all other minor usage. Power consumption is estimated to be 2,365,000 kwh/yr. Electricity cost was estimated at $0.13 per kilowatt-hour and assumed 24 hours per day operations.

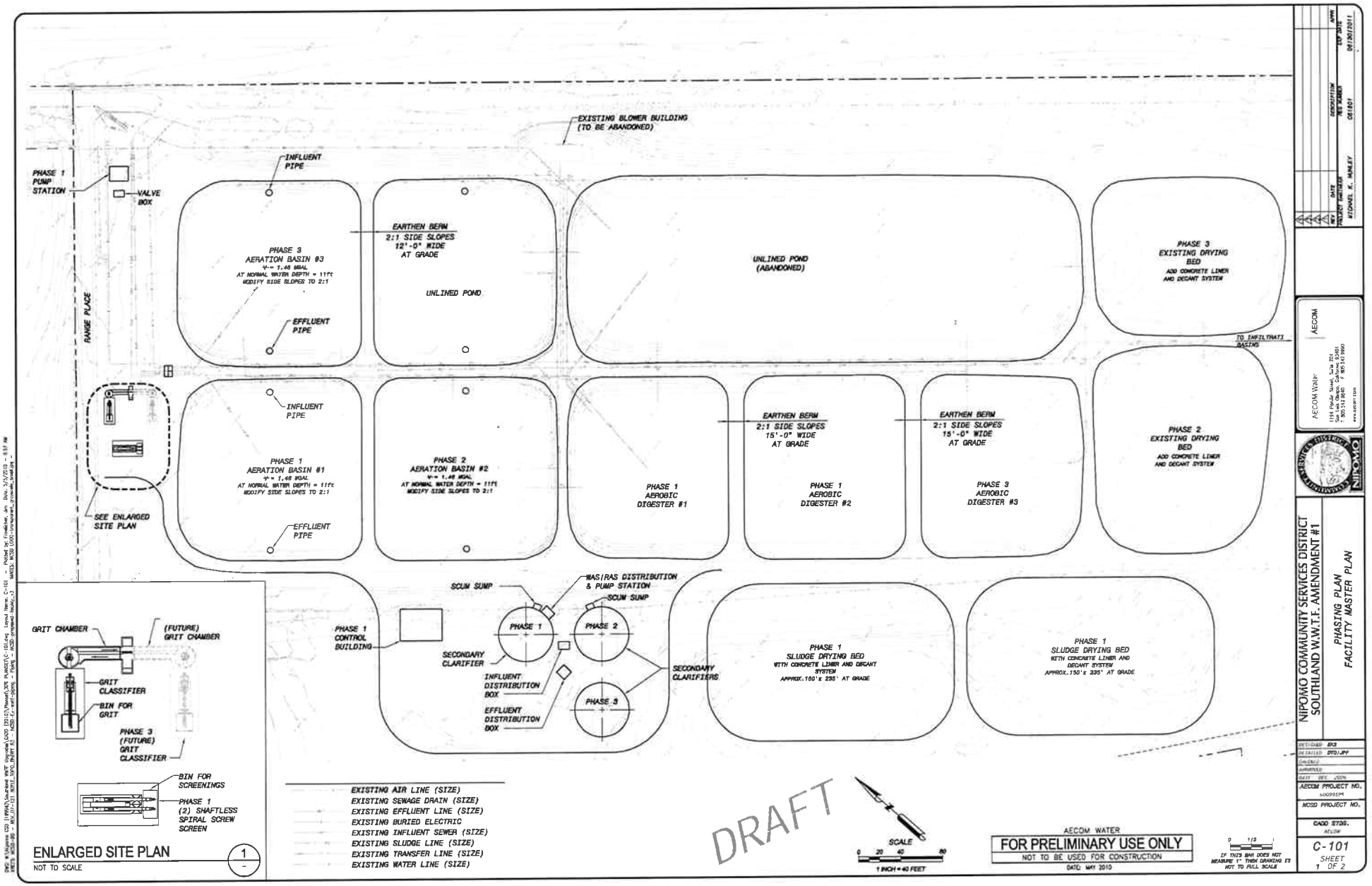
Biolac diffusers will need to be replaced every 5 to 10 years, and the air hoses will be replaced every 10 to 15 years. Table 14 costs assume all diffusers will be replaced at 7 years (budgeted at $25 each) and air hoses at 12 years (budgeted at $40 per linear foot).

Table 14 Phase 3 Power and Biolac Replacement Costs

	Annual Cost (2010 US $)
Electricity	$308,000
Biolac® Diffuser replacement	$6,800
Biolac® Air Hose replacement	$17,900
Total	**$332,700**

Capital Improvements Plan

We recommend that the District proceeds with design and construction of Phase 1 of the project as summarized in Tables 7 and 11, above. Components will include a new influent lift station, headworks, extended aeration treatment (Biolac), secondary clarifiers, aerobic sludge digesters, and new sludge drying beds. The construction cost opinion came to approximately $8.9 million, with a 25% contingency.


EXISTING BLOWER BUILDING
(TO BE ABANDONED)
PHASE 1
PUMP
STATION
VALVE
BOX
INFLUENT
PIPE
RANGE PLACE
PHASE 3
AERATION BASIN #3
+/- 1.46 MGAL
AT NORMAL WATER DEPTH = 11ft
MODIFY SIDE SLOPES TO 2:1
EFFLUENT
PIPE
EARTHEN BERM
2:1 SIDE SLOPES
12'-0" WIDE
AT GRADE
UNLINED POND
UNLINED POND
(ABANDONED)
PHASE 3
EXISTING DRYING
BED
ADD CONCRETE LINER
AND DECANT SYSTEM
TO INFILTRATI
BASINS
INFLUENT
PIPE
PHASE 1
AERATION BASIN #1
+/- 1.46 MGAL
AT NORMAL WATER DEPTH = 11ft
MODIFY SIDE SLOPES TO 2:1
EFFLUENT
PIPE
PHASE 2
AERATION BASIN #2
+/- 1.46 MGAL
AT NORMAL WATER DEPTH = 11ft
MODIFY SIDE SLOPES TO 2:1
PHASE 1
AEROBIC
DIGESTER #1
EARTHEN BERM
2:1 SIDE SLOPES
15'-0" WIDE
AT GRADE
PHASE 1
AEROBIC
DIGESTER #2
EARTHEN BERM
2:1 SIDE SLOPES
15'-0" WIDE
AT GRADE
PHASE 3
AEROBIC
DIGESTER #3
PHASE 2
EXISTING DRYING
BED
ADD CONCRETE LINER
AND DECANT SYSTEM
SEE ENLARGED
SITE PLAN
SCUM SUMP
WAS/RAS DISTRIBUTION
& PUMP STATION
SCUM SUMP
PHASE 1
CONTROL
BUILDING
PHASE 1
PHASE 2
PHASE 3
SECONDARY
CLARIFIER
SECONDARY
CLARIFIERS
INFLUENT
DISTRIBUTION
BOX
EFFLUENT
DISTRIBUTION
BOX
PHASE 1
SLUDGE DRYING BED
WITH CONCRETE LINER AND DECANT
SYSTEM
APPROX. 150' x 235' AT GRADE
PHASE 1
SLUDGE DRYING BED
WITH CONCRETE LINER AND
DECANT SYSTEM
APPROX. 150' x 235' AT GRADE
GRIT CHAMBER
(FUTURE)
GRIT CHAMBER
GRIT
CLASSIFIER
BIN FOR
GRIT
PHASE 3
(FUTURE)
GRIT
CLASSIFIER
BIN FOR
SCREENINGS
PHASE 1
(2) SHAFTLESS
SPIRAL SCREW
SCREEN
EXISTING AIR LINE (SIZE)
EXISTING SEWAGE DRAIN (SIZE)
EXISTING EFFLUENT LINE (SIZE)
EXISTING BURIED ELECTRIC
EXISTING INFLUENT SEWER (SIZE)
EXISTING SLUDGE LINE (SIZE)
EXISTING TRANSFER LINE (SIZE)
EXISTING WATER LINE (SIZE)
DRAFT
SCALE
0 20 40 80
1 INCH = 40 FEET
AECOM WATER
FOR PRELIMINARY USE ONLY
NOT TO BE USED FOR CONSTRUCTION
DATE: MAY 2010
IF THIS BAR DOES NOT
MEASURE 1" THEN DRAWING IS
NOT TO FULL SCALE
ENLARGED SITE PLAN
NOT TO SCALE
1
-
NIPOMO COMMUNITY SERVICES DISTRICT
SOUTHLAND W.W.T.F. AMENDMENT #1
PHASING PLAN
FACILITY MASTER PLAN
AECOM PROJECT NO.
NCSD PROJECT NO.
CADD STDS.
C-101
SHEET
1 OF 2

APPENDIX A

FEBRUARY 12, 2010 REVISED DRAFT MEMORANDUM
CHANGES IN DESIGN FLOW AND STARTUP CONDITIONS FOR SOUTHLAND WWTF UPGRADE PROJECT

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805 542 9840 tel
805 542 9990 fax

REVISED DRAFT Memorandum

To	Mr. Michael LeBrun, General Manager	Page	1
CC	Mr. Peter Sevcik, PE, District Engineer Ms. Tina Grietens, Utilities Superintendent		
Subject	Changes in Design Flows and Startup Conditions for Southland WWTF Upgrade Project		
From	Mike Nunley, PE Eileen Shields, PE		
Date	February 12, 2010		

As part of the preliminary design effort for the Southland Wastewater Treatment Facility (WWTF) Upgrade Project, the Nipomo Community Services District (District) has been providing AECOM with recent influent monitoring results. AECOM has been using the data to develop a comprehensive picture of the design loads and startup conditions for plant improvements, and has projected considerably different load projections than those estimated in the January 2009 Southland WWTF Master Plan and preceding reports. This memorandum will provide a review of prior flow estimates, a summary of the current projections, and recommendations for moving forward with the Southland WWTF Upgrade Project.

Background

For nearly four years, AECOM has been tracking influent flows and biological oxygen demand (BOD) concentrations at Southland WWTF. Figure 1 displays flow data collected since spring of 2004. AECOM has completed several reports for the District to summarize these records, assess the capacity of the District's Southland WWTF, and assist with planning for improvements.

In May 2006, AECOM (formerly Boyle Engineering) completed a report entitled *Southland Wastewater Treatment Facility Action Plan*. This report represented phase one of the District's two-phase response to the Regional Water Quality Control Board (RWQCB) Notice of Violation (NOV), received in February 2006. The NOV was issued for a series of Waste Discharge Requirement violations at the Southland WWTF, occurring during 6 months in 2005. The Action Plan provided a review of the violations and potential causes, an assessment of plant capacity, and a summary of work completed by operators to address violations. Recommendations were provided for short-term improvements (including positioning of new aerators in all ponds and removal of baffles in Ponds 3 and 4), development of a Facility Master Plan, and effluent monitoring.

AECOM completed the *Draft Southland Master Plan* in February 2007. The Facility Master Plan represented phase two of the District's response to the RWQCB NOV. The report provided a more detailed capacity analysis, discussed water quality goals for the treated effluent, identified improvements needed for WWTF and the influent trunk line to meet existing and projected demands, and developed a capital improvements plan.

As a result of the geotechnical investigations performed by the District simultaneously with the Draft Master Plan, a growing mound of effluent was discovered beneath the infiltration basins on the Southland WWTF site. This spurred additional hydrogeologic studies (performed by Fugro West, Inc.) to characterize the effluent mound, evaluate fate and transport of the treated effluent, and estimate onsite disposal capacity. It was concluded that the mound would continue to grow at current flows, and would grow more quickly as flows increase in the future. Using the results from these studies, AECOM evaluated future alternatives for reuse and/or disposal of treated effluent (Preliminary Screening Evaluation of Southland WWTF Disposal Alternatives, completed January 2009). The report provided a preliminary ranking of nine alternatives, including offsite infiltration at various locations and reuse as irrigation for landscape or agriculture.

After the conclusion of these investigations, the District requested that AECOM finalize the Southland WWTF Master Plan. Completed in January 2009, the Final Master Plan included a full update to the capacity analysis, recommendations, and capital improvements plan initially set forth in the 2007 Draft Master Plan.

Historical Plant Loading

As described above, various reports have summarized flow and loading data at Southland WWTF. The Action Plan was AECOM's first study addressing this issue and it assessed data collected between April 2004 and March 2006. Flow data indicated that the recorded maximum month flow[1] (MMF) was equal to 0.79 million gallons per day (MGD), which is approximately 88% of permitted capacity of 0.9 MGD. Influent wastewater strength was examined by measuring the influent biological oxygen demand, recorded at 5 days (BOD_5). The 2005 maximum month average BOD_5 was measured to be 290 mg/L. This value was used to evaluate the plant's treatment capacity. It was concluded that with some minor modifications, the plant had sufficient capacity for current demands, but flow projections should be prepared in the subsequent Facility Master Plan in order to estimate when capacity would be exceeded.

The capacity analysis in the Draft Facility Master Plan assessed two complete years of data from September 2004 through August 2006, in order to develop design flows. The MMF was equal to 0.79 MGD. Existing flow data was used to develop peaking factors to estimate flows at various conditions. A design value for BOD loading was developed by calculating the 90^{th} percentile influent BOD_5. The 90^{th} percentile represents the value at which 90% of the values in the data set are equivalent or lower. Based on the data set, the 90% percentile influent BOD_5 was equal to 350 mg/L.

The average annual flow (AAF) estimate from the *Water and Sewer Master Plan* (Cannon Associates, December 2007), for the year 2030 was utilized to develop projected flow rates at 5-year increments for the Wastewater Treatment Facility. These values, along with the peaking factors and projected loading rates, provided the basis for evaluating the future capacity of the facility and evaluating various upgrade options. The existing and projected average annual and maximum monthly flow rates from the Draft Facility Master Plan are summarized in Table 1. The report estimated that the permitted capacity (MMF = 0.9 mgd) could be reached within the year.

[1] Maximum month flow is the average daily flow rate for the maximum month in the study period and is used to describe the plant's permitted hydraulic capacity in the Waste Discharge Requirements, issued by the RWQCB. The permitted capacity for the Southland WWTF is a MMF of 0.9 mgd.

Table 1 Projected Flow Rates

Flow Condition	Peaking Factor	Existing Flow (mgd)	Projected Flow (mgd)*				
			2010	2015	2020	2025	2030
Average Annual Flow (AAF)	--	0.591	0.838	1.05	1.25	1.45	1.67
Maximum Monthly Flow (MMF)	1.34	0.791	1.12	1.41	1.68	1.94	2.34
* Projected AAF based on Draft Water and Sewer Master Plan (GTA & Cannon Assoc.)							

The Final Facility Master Plan (January 2009) re-evaluated the data, using flow and BOD concentrations from September 2006 through August 2008. The MMF was nearly 20% less than that from the previous data set, at 0.64 MGD. Peaking factors were revised accordingly. The 90th percentile BOD_5 was slightly greater, at 360 mg/L.

The 2030 AAF was held at 1.67 MGD. However, the "five-year" projections were interpolated between current and 2030 flows. The existing and projected average annual and maximum monthly flow rates from the Final Master Plan are summarized in Table 2. The updated projections indicated that the permitted capacity (MMF = 0.9 mgd) could be reached by December 2010.

Table 2 Projected Flow Rates

Flow Condition	Peaking Factor	Existing Flow (mgd)	Projected Flow (mgd)*				
			2010	2015	2020	2025	2030
Average Annual Flow (AAF)	--	0.59	0.73	0.97	1.20	1.44	1.67
Maximum Monthly Flow (MMF)	1.09	0.64	0.80	1.06	1.31	1.57	1.82
* Projected AAF based on Water and Sewer Master Plan Update (Cannon Assoc., December 2007)							

Re-evaluation of Data

Flow Rates

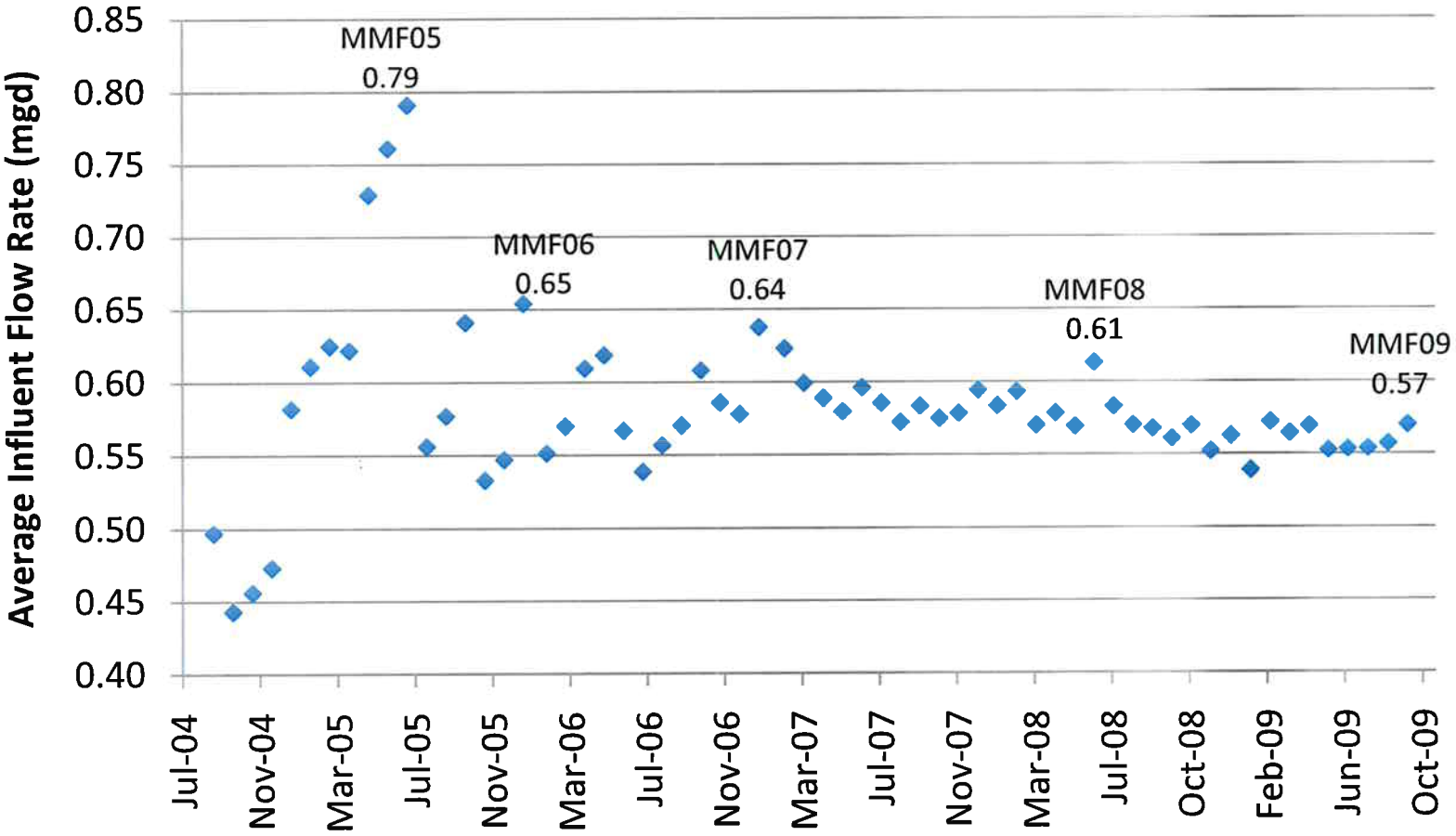
The 30-day average daily flow rates (ADF) for each month between September 2004 and October 2009 were graphed to evaluate for trends (Figure 1). Upon review of Figure 1, the first apparent trend is higher precision in the data set over time. The flow rates during the first two years of the graph show a relatively wide variability. Between September 2004 and August 2005 the flows vary by approximately 0.35 MGD, ranging from 0.44 to 0.79 MGD. During the next eighteen months, the variation is reduced to approximately 0.12 MGD, with flow rates ranging between 0.53 and 0.65 MGD.

Whereas, after February 2007 the spread is reduced further to 0.07 MGD, with the flow rates ranging from 0.54 to 0.61 MGD.

In addition, a reduction of flow over time is observed. The maximum month flows (MMF) are noted on the graph for each year between 2005 and 2009, measured between the months of September and August. Between 2005 and 2009, the MMF dropped each year from 0.79 MGD to 0.57 MGD.

AECOM and District staff expect that the recent data is more accurate than prior records. Prior to November 2006, flows were manually read from a flow totalizer, sometimes at varying times of day. Since then, staff has automated the data collection process, and has been using SCADA data to report flows and calculate daily totals, adding consistency to the data.
In addition, some of the high flow measurements recorded in the past could be due to high flow backing up from the influent lift station, surcharging the upstream trunk main and flow meter. While this condition could also affect current data, these high data readings could have contributed considerably to errors in prior daily and monthly flow measurements when coupled with inconsistent flow measurement procedures.

Figure 1. Average Influent Flow

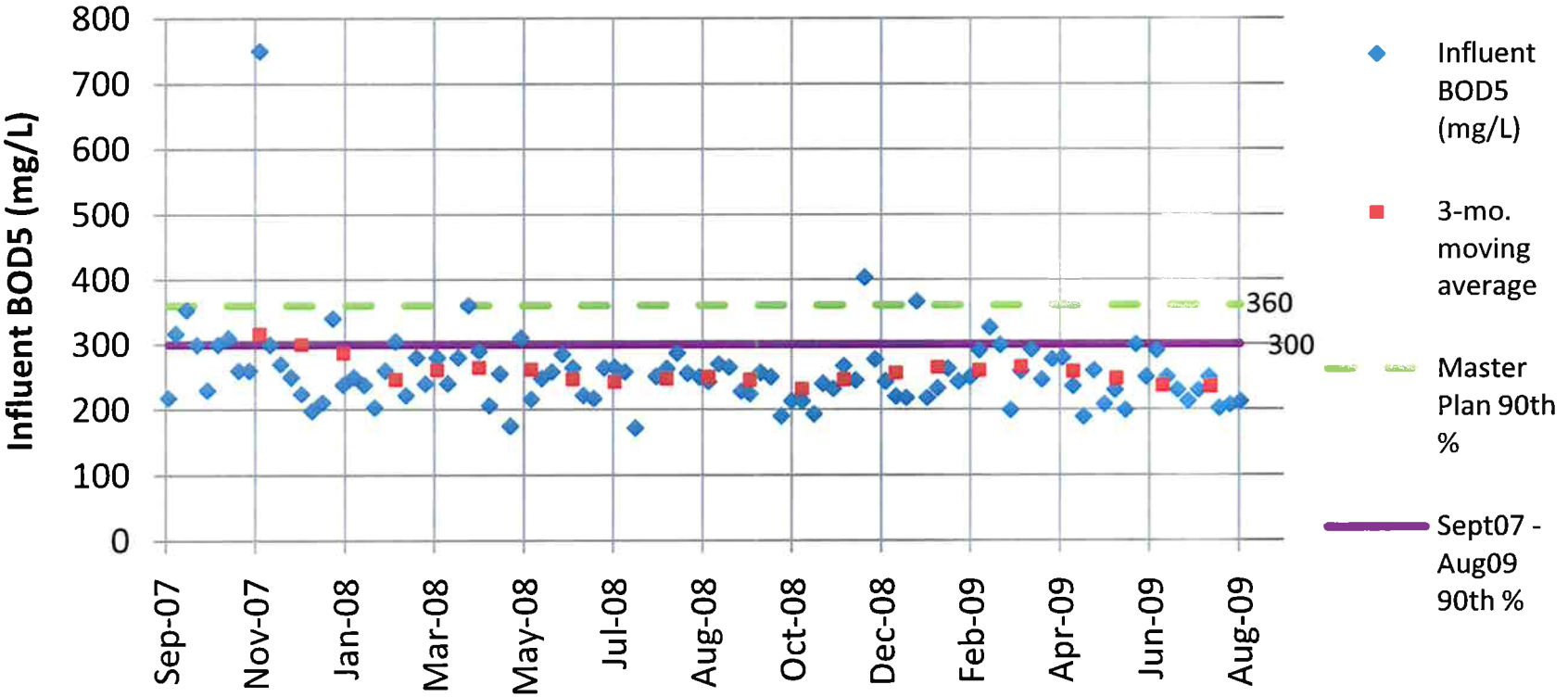


Influent Loading

The most recent 2-years of BOD_5 data (September 2007 through August 2009) were graphed to examine the current influent conditions (Figure 2). Samples of the WWTF influent are taken weekly and analyzed for BOD_5. Figure 2 shows the 3-month moving average alongside weekly BOD_5 values. The moving average is used to examine trends over a data set. Here, it indicates a downward trend of the influent BOD_5. At first glance, a "rolling," or seasonal trend might be estimated, but upon further evaluation, the increases and decreases don't correlate with seasons over the two years of data. For example, a decrease is seen for November 2007 through February 2008, the winter season. However, from October or November 2008 through March 2009, the moving average is rising.

Figure 2 also shows the 90^{th} percentile BOD_5 for this period (300 mg/L) and the 90^{th} percentile BOD_5 calculated for the Master Plan, which is 20% higher than the current value.

Figure 2. Influent BOD_5



Flow Projections

As previously mentioned, the Facility Master Plan utilized flow projections developed as part of the Water and Sewer Master Plan (Cannon Associates, December 2007). Projected for year 2030, the buildout average annual flow rate for the WWTF is estimated at 1.67 MGD. Intermediate flow rates were projected in the Draft Facility Master Plan, and updated in the final, to assist with phasing recommendations. Using the latest two years of flow rate data, the projections were recreated with the same rate of increase to 1.67 MGD. The three sets of flow data and projections were graphed together for comparison purposes (Figure 3). By projecting the same rate of flow increase starting from the existing average annual flow, the estimated buildout flow rate of 1.67 MGD is reached in 2032, two years later than previously estimated.

To assess the implications of the revised flow projections, the treatment capacity of the existing pond system was re-evaluated utilizing the spreadsheet model developed for the Facility Master Plan. First-order rate kinetics were used to estimate BOD_5 degradation in the aeration ponds. Updated BOD_5 values were utilized and various flow and temperature conditions were considered. Two operational configurations were analyzed: ponds in parallel (the current operational configuration, equally split flow between 2 trains of 2 ponds), and ponds in series (full flow through all 4 ponds, sequentially).

The analysis suggests that the existing pond system has capacity to handle an AAF of 0.83 MGD while operating in parallel. This flow corresponds to a MMF of approximately 0.9 MGD, the facility's permitted hydraulic capacity. If the ponds are operated in series configuration, the model suggests the pond volume is sufficient handle an average annual flow of 1.0 MGD, or approximately 1.1 MGD on a MMF basis if additional aeration is provided[2].

These two capacity estimates are shown as horizontal lines on Figure 3. Following the projection from the most recent flow data (project titled Dec 09 Design), Figure 3 indicates that the WWTF may reach the treatment capacity for parallel configuration and the permitted hydraulic capacity (0.83 MGD, AAF) around the year 2015. Figure 3 also shows that changing to series configuration could provide an additional 3 ½ years of capacity.

However, there are limitations to the model. Typically the model is effective at evaluating detention times and at sizing ponds during design. Several variables impact the performance of pond systems that are difficult to model, including solids buildup, algal growth and decay, wind mixing, and temperature stratification. Therefore, conclusions must be conservative when predicting effluent concentrations and estimating treatment capacity.

Another reason to be conservative is the existing evidence of limited capacity in the ponds provided by historical waste discharge reports. In 2008, the WWTF experienced high effluent BOD_5 concentrations during 4 months (April through July) and high TSS concentrations in July. In 2009, TSS values were high during 7 months (March through June and August through October), and high BOD_5 concentrations were seen during 2 months, November and December.

These high BOD concentrations correlate with seasonal shift from high summer temperatures to cooler fall temperatures. Typically, pond systems can experience "overturning" in the fall whereby the pond surface cools, temperature stratification no longer protects lower depths from surface mixing, and lower-quality water begins to mix into the top layers of the ponds.

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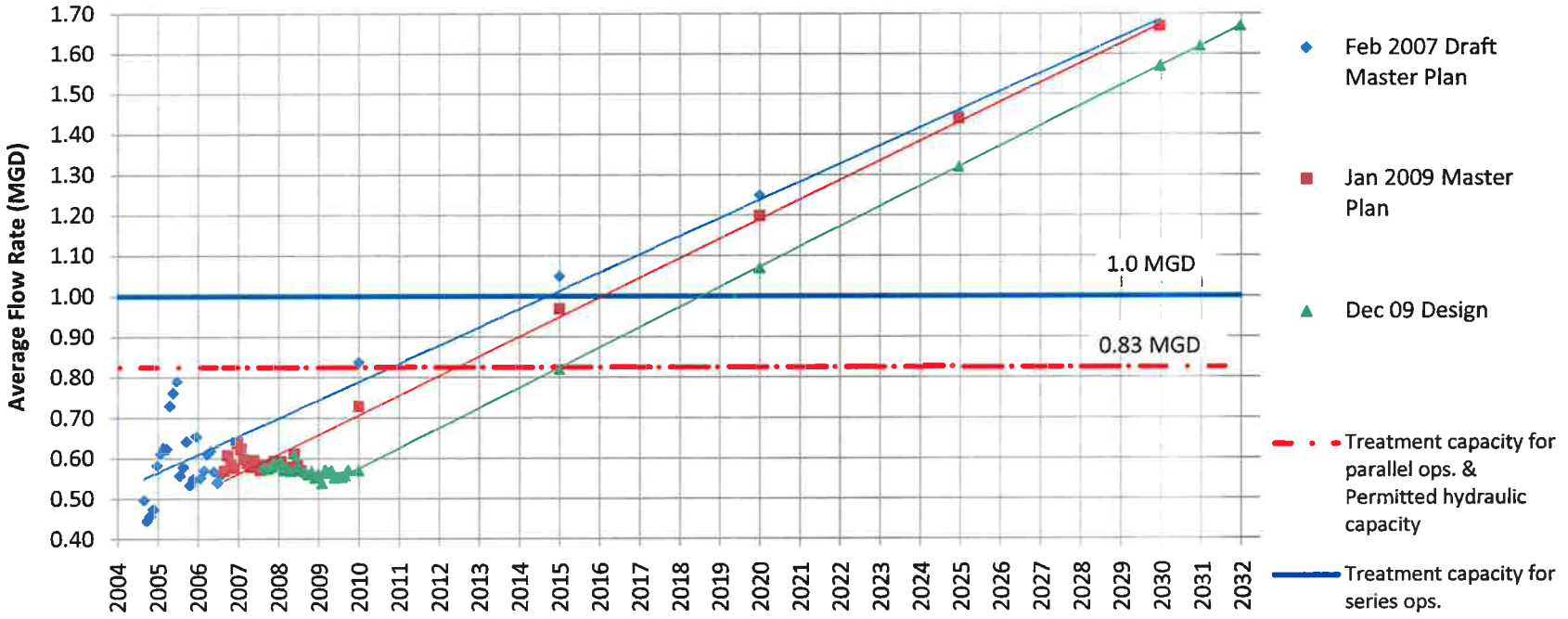
[2] Additional aeration capacity will be required for both scenarios; approximately 15 horsepower (hP) more (for a total of 135 hP) for a flowrate of 0.83 MGD and an additional 45 hP (total of 165 hP) for 1.0 MGD.

Another potential reason for the high BOD concentrations could be low oxygen levels caused by aerator failures, due to ragging. One of the two grinders at the plant failed, allowing rags and other debris to flow into the ponds. Several aerators were clogged with debris and were not functioning consistently throughout November and December.

High TSS values could result from several factors. Late fall readings could be caused by algal blooms. Aerators could be pulling water with higher solids into the surface of the pond, near the outlet depth. The outlet and downstream pipes could have sediment or sludge that are picked up in the effluent samples.

The high BOD and TSS values, which occur in spite of model results suggesting pond and aeration capacity are adequate to meet permit limitations, are examples of the difficulties inherent in modeling, controlling, and operating treatment pond systems. Ponds with surface aerators cannot be simulated as "ideal reactors" due to short-circuiting, dead spots, and other flow characteristics that occur in large, irregularly-mixed volumes. These factors significantly increase error between predicted and actual BOD results, in particulary. Unlike modern treatment technologies, pond systems have few variables that can be controlled by operators other than turning aerators on or off. In activated sludge systems, for example, operators can control air flow, air distribution, and also the population and concentration of microbes that degrade waste. This allows operators to optimize system performance (and BOD and TSS removal) as waste flows and characteristics change seasonally. Sludge cannot settle properly in a partially-mixed pond, whereas activated sludge systems use independent clarifiers to settle solids, reducing both TSS and BOD.

Figure 3. Flow Projections & WWTF Capacities



Impacts to WWTF Upgrade Design

The Facility Master Plan analysis that led to the recommendation of Biolac® wave oxidation system for Southland WWTF remains valid. The recommendation was based on a comparison of well-proven biological treatment processes, all of which would be impacted by a reduction in influent loading. Relative to systems with comparable treatment levels, Biolac® has a lower life cycle cost, with simpler day-to-day operations and maintenance, but with system capabilities that will allow the operators to handle fluctuations in flow and waste concentrations unlike the existing pond system. However, the sizing is impacted by changes in influent loading and will need to be revisited.

AECOM and District staff have discussed the possibility of upgrading the existing influent lift station and installing new screening and grit removal systems without replacing the existing aerated pond systems. This approach would not address the prior NOV, current poor performance of the pond systems, and continued inability to meet permit limitations in spite of sludge extraction from all four ponds, installation of new aerators, and outlet improvements. AECOM recommends replacing the pond system while the bidding climate is good for new construction and while flows and loads are sufficiently low that a partial plant shutdown can be mitigated.

However, plant sizing and construction phasing should be reassessed. Treatment systems can perform very poorly at loads that are significantly less than their design values. If the project were installed without an increase in loading, it is unlikely that the manufacturer would provide a process warranty at a satisfactory treatment level. Based on the analyses discussed herein, the WWTF is experiencing a lower loading than was anticipated for startup conditions (approximately 30% lower flow rate and 20% lower influent BOD_5 concentration). A decreased loading equates to less nutrients and carbon for the microbes contained in the biological treatment process, which could result in decreased treatment level overall.

Phasing Plan

In order to develop an appropriate long-term strategy for upgrading the Southland WWTF, AECOM recommends revisiting the two-stage phasing plan from the Master Plan and developing a three-stage program. This would require a new 2030 site plan and updated capital improvement plan as provided in the last sections of the report.

A significant part of the improvement plan will remain the same. Due to hydraulic limitations in the Frontage Road Trunk Main and plant headworks, the influent lift station should be replaced as recommended in the Facility Master Plan.

The primary difference from the Facility Master Plan would be modifications to Ponds 1 and 2 in order to accommodate more, smaller Biolac cells (possibly four) instead of the two cells initially proposed. The 2009 Facility Master Plan developed a two-phase program that included the following, in addition to sludge holding lagoons and drying beds:

> Phase I – 1.25 MGD[3]: Construct new influent lift station, screens, grit chambers, a Biolac cell in each of Ponds 1 and 2, and two clarifiers.
>
> Phase II – 1.67 MGD: Install additional aeration in each Biolac cell.

[3] Note all flows in this section are AAF

It is now recommended that the District consider phasing the project as follows:

Phase I - 0.9 MGD: Construct new influent lift station, screens, grit chamber, and Biolac cells. Install aeration equipment in only one Biolac cell. Consider construction of two clarifiers or possibly one complete clarifier and one unfinished clarifier with equipment in storage.

Phase II – 1.3 MGD: Install aeration equipment in second Biolac cell

Phase III – 1.67 MGD: Construct and install equipment for third and fourth Biolac cells and bring second clarifier online

Recommendations

In our original May 11, 2009 contract with the District, it was assumed the Concept Design Report phase of the work would focus on detailed design of the Phase I project developed in the Facility Master Plan. The work to modify this phasing plan and update the cost opinions to accommodate a "smaller" Phase I project was not anticipated in our scope.

AECOM recommends the District direct us to prepare a budget revision request for the additional planning work to develop a new phasing plan and capital improvement plan that reflect the lower organics loads and flows. The plan would meet existing demands as well as the future flow conditions specified in the 2007 Water and Sewer Master Plan. This work would allow us to develop a strategy that optimizes the District's future investments at the plant, anticipates future needs, protects treatment process warranties, and ensures the initial stages of the Southland WWTF will be operable and meet anticipated effluent limitations.

TO: BOARD OF DIRECTORS

FROM: DON SPAGNOLO
GENERAL MANAGER

DATE: JULY 22, 2010

AGENDA ITEM
E-5

JULY 28, 2010

2010 SPRING GROUNDWATER INDEX

ITEM

Consider presentation of the 2010 spring groundwater index for the Nipomo Mesa area.

BACKGROUND

Brad Newton of SAIC is scheduled to summarize the 2010 groundwater index. The report is an independent product of SAIC and is not reviewed or recognized by the Nipomo Mesa Management Area Technical group.

FISCAL IMPACT

Development of this report is included in the contract budget with SAIC.

RECOMMENDATION

Staff recommends that the Board receive the report and give direction to staff.

ATTACHMENTS

- 2010 Spring Groundwater Index

TO: Don Spagnolo, General Manager, Nipomo Community Services District

FROM: Joel Degner E.I.T., Brad Newton, Ph.D., P.G.

RE: Spring 2010 Groundwater Index

DATE: July 15, 2010

INTRODUCTION

Groundwater surface elevations (GSE) underlying the Nipomo Mesa are regularly measured at many places (wells) across the mesa. The Spring 2010 Groundwater Index (GWI) has been computed and presented herein along with historical GWI from 1975 to present based on these groundwater surface elevation measurements collected during spring and fall across the Nipomo Mesa. Limited measurements of GSE were available for the years 1982, 1983, 1984, 1994 and 1997, thus precluding a reliable calculation of GWI for those years.

Ground elevation surveys for the key wells were conducted in preparation of the 1st Annual Report - Calendar Year 2008 for the Nipomo Mesa Management Area (NMMA). These updated reference points were not incorporated into the GWI to preserve consistency in the historical calculations and presentations.

The NMMA Technical Group has not reviewed this technical memorandum, its findings, or any presentation of this evaluation.

RESULTS

Spring 2010 GWI is 80,000 acre-feet (AF), which is 4,000 AF greater than the Spring 2009 GWI (Table 1, Figure 1). The Key Well Index from NMMA 2nd Annual Report - Calendar Year 2009 generally follows the same historical trends as the GWI (Figure 1).

METHODOLOGY

The calculation of Spring and Fall GWI are based on GSE measurements regularly made by San Luis Obispo County Department of Public Works (SLO DPW), NCSD, USGS, and Woodlands. The integration of GSE data is accomplished by using computer software to interpolate between measurements and calculate GWI within the principal production aquifer assuming an unconfined aquifer and a specific yield of 11.7 percent. Limited measurements of GSE were available for the years 1982, 1983, 1984, 1994 and 1997, precluding a reliable calculation of GWI for those years.

Groundwater Surface Elevation Measurements

Groundwater surface elevation data were obtained from SLO DPW, NCSD, USGS, and Woodlands. SLO DPW measures GSE in monitoring wells during the spring (April) and the fall

SAIC Engineering, Inc. A Subsidiary of Science Applications International Corporation
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(October) of each year. Woodlands and NCSD measures GSE in their monitoring wells monthly. For the years 1975 to 1999, available representative GSE data were used to compute GWI. For the years 2000 to 2010, only GSE data from the same 45 wells were used to compute GWI.

The GSE data was reviewed in combination with well completion reports and historical hydrographic records in order to exclude measurements that do not accurately represent static water levels within the principal production aquifer. Wells that do not access the principal production aquifer or were otherwise determined to not accurately represent static water levels within the aquifer were not included in analysis.

Groundwater Surface Interpolation

The individual GSE measurements from each year were used to produce a GSE field by interpolation using the inverse distance weighting (IDW) method.

Groundwater Index

The value of the groundwater index was computed for the area defined in Phase III of the trial. The GWI was computed by subtracting both the mean sea level surface (elevation equals zero) and the volume of bedrock above sea level from the hypothetical saturated volume. The bedrock surface elevation is based on Figure 11: Base of Potential Water-Bearing Sediments, presented in the report, Water Resources of the Arroyo Grande – Nipomo Mesa Area (DWR 2002). The bedrock surface elevation was preliminarily verified by reviewing driller reports obtained from DWR. The saturated volume above sea level and bedrock was multiplied by a specific yield of 11.7% to compute the GWI. The specific yield is based on the average weighted specific yield measurement made at wells within the Nipomo Mesa Hydrologic Sub-Area (DWR 2002, pg. 86).

Key Well Index

The NMMA Technical Group selected the data from eight inland key wells to represent the whole of the NMMA. The Key Well Index was calculated annually using Spring GSE measurements from 1975 to 2008. The Key Wells were selected to represent various portions of the groundwater basin within the NMMA. In selecting the eight key wells, the following criteria were applied so that the wells generally represent the NMMA as a whole:

(1) The wells are geographically distributed,

(2) No single well overly influences the Key Well Index.

The first criterion was met in the selection of the wells, such that no well represented a disproportionate area. To meet the second criterion, groundwater elevations from each well were normalized so that any well where elevations were on the average higher or lower than the other wells did not overly influence the magnitude of the Key Well Index. This

normalization was accomplished by dividing each spring groundwater elevation measurement by the sum of all the Spring GSE data for that well.

The Key Well Index was defined for each year as the average of the normalized spring groundwater data from each well. The lowest value of the Key Well Index could be considered the "historical low" within the NMMA.

REFERENCES

Department of Water Resources (DWR). 2002. Water Resources of the Arroyo Grande – Nipomo Mesa Area, Southern District Report.

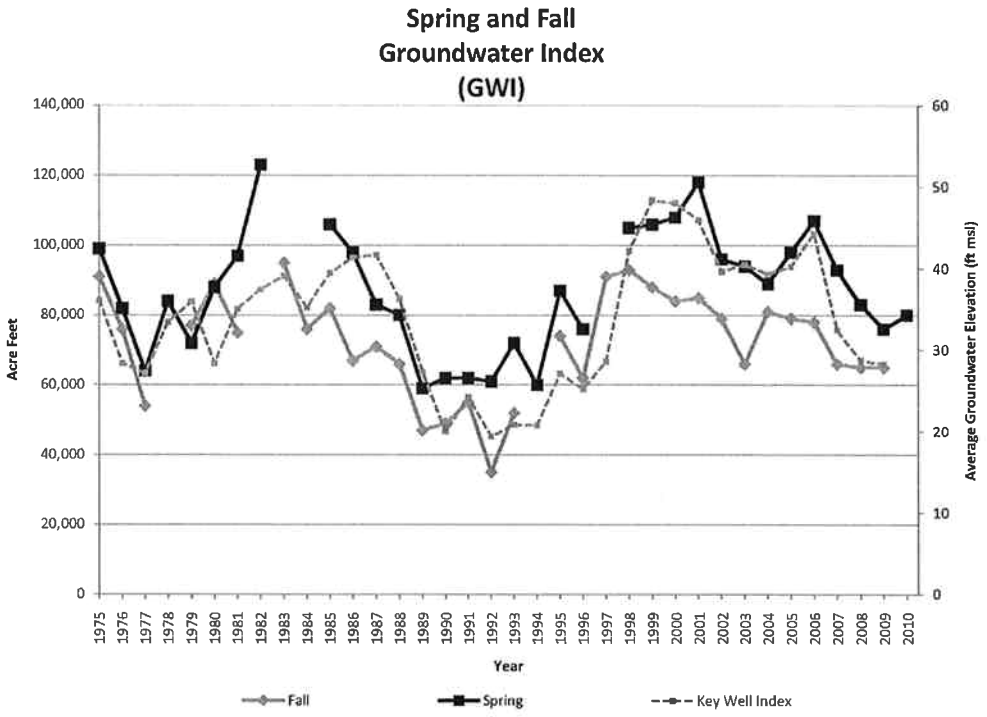
Table 1

Spring and Fall Groundwater Index (GWI)

Year	Rainfall (inches)	Spring GWI (Acre-Feet)	Number of Wells	Fall GWI (Acre-Feet)	Number of Wells	Spring to Fall Difference (Acre-Feet)
1975	17.29	99,000	54	91,000	54	8,000
1976	13.45	82,000	45	76,000	65	6,000
1977	10.23	64,000	59	54,000	63	10,000
1978	30.66	84,000	62	---	35	---
1979	15.80	72,000	57	77,000	63	(5,000)
1980	16.57	88,000	55	89,000	46	(1,000)
1981	13.39	97,000	46	75,000	47	22,000
1982	18.58	123,000	42	---	31	---
1983	33.21	---	35	95,000	42	---
1984	11.22	---	14	76,000	37	---
1985	12.20	106,000	37	82,000	41	24,000
1986	16.85	98,000	51	67,000	51	31,000
1987	11.29	83,000	48	71,000	52	12,000
1988	12.66	80,000	51	66,000	49	14,000
1989	12.22	59,000	47	47,000	57	12,000
1990	7.12	62,000	55	49,000	53	13,000
1991	13.06	62,000	52	55,000	54	7,000
1992	15.66	61,000	52	35,000	48	26,000
1993	20.17	72,000	54	52,000	61	20,000
1994	12.15	60,000	54	---	36	---
1995	25.47	87,000	35	74,000	52	25,000
1996	16.54	76,000	45	62,000	57	14,000
1997	20.50	---	20	91,000	48	---
1998	33.67	105,000	41	93,000	44	12,000
1999	12.98	106,000	56	88,000	49	18,000
2000	14.47	108,000	44	84,000	41	24,000
2001	18.78	118,000	43	85,000	35	33,000
2002	8.86	96,000	29	79,000	41	17,000
2003	11.39	94,000	37	66,000	42	28,000
2004	12.57	89,000	42	81,000	35	8,000
2005	22.23	98,000	38	79,000	39	19,000
2006	20.83	107,000	44	78,000	41	29,000
2007	6.96	93,000	44	66,000	42	27,000
2008	15.18	83,000	43	65,000	42	18,000
2009	10.31	76,000	44	65,000	43	11,000
2010	17.05	80,000	45			

---: insufficient for evaluation

Figure 1



1

TO: BOARD OF DIRECTORS

FROM: DON SPAGNOLO
GENERAL MANAGER

DATE: JULY 22, 2010

AGENDA ITEM
E-6

JULY 28, 2010

CHANGE WATER CONSERVATION COMMITTEE NAME

ITEM

Consider changing the name of the Water Conservation Committee to the Conservation Committee [RECOMMEND APPROVAL]

BACKGROUND

The Water Committee was originally formed to address water related aspects of the District's operations and advise the Board on specific issues. The committee has evolved as the focus has turned to water conservation to advise to Board on water conservation programs for indoor and outdoor residential users including plumbing fixtures and landscaping. Conservation is also important in almost all aspects of the District's operations. The committee could also address conservation opportunities related to solid waste, wastewater and office facilities.

Ad Hoc committees are appointed by the Board President as necessary or advisable in accordance with Section 11 of the Board By-Laws and Policies:

11.2 Standing Committees

(a) The Board may create standing committees at its discretion. Standing committees shall be advisory committees to the Board of Directors and shall not commit the District to any policy, act or expenditure. Each standing committee may consider District related issues, on a continuing basis, assigned to it by the Board of Directors. Committee members shall be appointed by the President of the Board of Directors.

(b) All standing committee meetings shall be conducted as public meetings in accordance with the Brown Act and Sections 2,3 and 4 of these Bylaws. Summary notes for each meeting of each committee shall be forwarded to the NCSD Board of Directors as a public record.

Changing the Water Conservation Committee name to Conservation Committee would allow the committee to address other areas of the District's operations including solid waste, wastewater and office facilities.

FISCAL IMPACT

There is no fiscal impact.

RECOMMENDATION

Staff recommends the Board approve changing the name of the Water Conservation Committee to the Conservation Committee.

TO: BOARD OF DIRECTORS

FROM: DON SPAGNOLO
GENERAL MANAGER

DATE: JULY 23, 2010

AGENDA ITEM
PUBLIC FACILITIES CORPORATION

A
JULY 28, 2010

Nipomo Community Services District
PUBLIC FACILITIES CORPORATION

ITEM

Annual Meeting of the Nipomo Community Services District Public Facilities Corporation

BACKGROUND

The Nipomo Community Services District Public Facilities Corporation is required to meet annually in the month of July to review corporate activities, take appropriate action, and approve of previous Board minutes. The only action at this time is approving the minutes of the July 22, 2009, meeting of the Nipomo Community Services District Public Facilities Corporation. These Board minutes were included in the regular NCSD meeting minutes but were not separately approved by the corporation. The minutes are being presented today for approval.

RECOMMENDATION

Staff recommends that your Honorable Board approve the minutes of July 22, 2009, of the Nipomo Community Services District Public Facilities Corporation meeting.

ATTACHMENT

Minutes of July 22 2009

01:31:50 **ADJOURN TO NCSD PUBLIC FACILITIES CORPORATION**

President Harrison adjourned the regular meeting of the Nipomo Community Services District at 10:45 a.m. and opened the Public Facilities Corporation meeting.

ROLL CALL

At Roll Call, the following members of the Corporation were present:
Members Nelson, Vierheilig, Eby, Winn and Harrison

Public Comment on Agenda Items

A. NCSD PUBLIC FACILITIES CORPORATION ANNUAL MEETING
Approve 2008 Minutes

Bruce Buel, General Manager, explained that the purpose this year of the annual meeting is to approve the minutes of the last meeting held July 23, 2008. The Board discussed the purpose of the Public Facilities Corporation.

Upon motion by Director Winn and seconded by Director Eby, the Board unanimously approved the minutes of the July 23, 2008 NCSD Public Facilities Corporation. There was no public present to comment. Vote 5-0.

YES VOTES	NO VOTES	ABSENT
Directors Winn, Eby, Vierheilig, Nelson, and Harrison	None	None

ADJOURN TO NCSD – REGULAR MEETING
President Harrison adjourned the Public Facilities Corporation meeting at 10:51 a.m. and re-opened the regular meeting of the Nipomo Community Services District.

01:38:33 F. MANAGER'S REPORT

Bruce Buel, General Manager, presented the Manager's Report as written and answered questions from the Board.

Peter Sevcik, District Engineer, also answered questions from the Board concerning the report from Mr. LeBrun documenting the various water purveyors on the Mesa. Director Winn had a list of questions for consideration, which will be submitted in writing.

02:01:39 G. COMMITTEE REPORT

There were no committee meetings held since the last Board meeting.

02:02:06 H. DIRECTORS' REQUESTS TO STAFF AND SUPPLEMENTAL REPORTS

Director Vierheilig
Asked to put on a future agenda for further discussion – Is our current lobbying effort effective and should we be lobbying Sacramento also?

Director Winn
Asked for specs on the tractors being surplussed.
Would like to have an appointment, with the General Manager's approval, to see how District chemicals are being kept.
Asked to have staff look into the proposed formation of a County CFD in Nipomo.
Would like the Board to consider lobbying in Sacramento as well as Washington, DC.

TO: BOARD OF DIRECTORS

FROM: DON SAPGNOL.O
GENERAL MANAGER

DATE: JULY 23, 2010

AGENDA ITEM
F
JULY 28, 2010

GENERAL MANAGER'S REPORT

ITEM

Standing report to your Honorable Board -- *Period covered by this report is July 1, 2010 through July 23, 2010.*

DISTRICT BUSINESS

Administrative

- The District's Sphere of Influence was approved by the Board of Supervisors on July 13th and by LAFCO on July 15th.
- The 2010 Spring Groundwater Index report has been completed for presentation to the Board.
- 2010 Urban Water Management Plan administrative draft will be reviewed by staff on July 23rd.
- Recruitment for a Maintenance Supervisor will start in August.

Operations

- Storage Tank Re-habilitation project is approximately 90% complete.
- Security system installation at the Stand Pipe site is complete and connected to the SCADA system .
- Willow Road Waterline project is underway. Staff is reviewing material submittals.
- Via Concha well rehab is complete and back online.
- Maria Vista Estates has set a total of ten water meters.

Meetings

Significant meetings attended or scheduled:

- July 26 – Waterline Intertie Project Committee.
- July 29 - County Planning Staff to Review Projects.
- August 2 – Waterline Intertie Outreach Committee.
- August 9 – Southland Wastewater Treatment Facility Committee.
- August 9 – Water Conservation Committee.
- August 10 - NMMA Technical Group.

Safety Program

- No incidents or accidents to report.

RECOMMENDATION

Staff seeks direction and input from your Honorable Board.